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ABSTRACT

Previous studies of language have indicated that various qualifier words (e.g., I know that, probably) attached to statements represent differing degrees of belief in the statements. Nine qualifiers were studied which represent 3 degrees of probability and 3 forms of wording: "certainly, it is certain, I know, Probably, it is likely, I believe, Possibly, it is possible, I suspect." Hypotheses and questions focused on: (1) qualifier degree; (2) interaction of degree and form; (3) interaction of degree and location; and (4) unqualified reasons for effects upon receiver responses. The major conclusions were as follows: (1) certainty degree words effected stronger conclusions than the other qualifiers, but unqualified statements are as strong as or stronger than certainty statements; (2) word forms of qualifiers interact with degree in a complex way, with personal thought forms tending to be the stronger; (3) "probably" has an ambiguous meaning between likely and possible degrees; (4) content and logic factors influence different results for qualifiers in argument from the words viewed in isolation; and (5) though there is some stability in repeated responses, there are also individual variations and inconsistency of response by many students who tend to be the less intelligent and less able readers. (Author)

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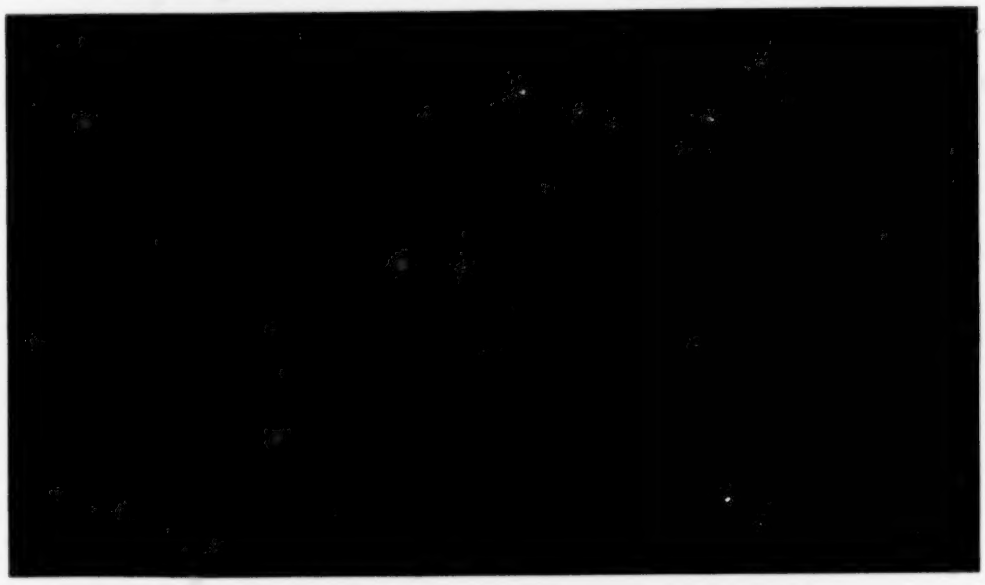

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Technical Report No. 167

THE EFFECT OF VERBAL QUALIFICATION OF ARGUMENT REASONS UPON ACCEPTANCE OF THE DERIVED CLAIM

By Jerry D. Feezel

Report from Concepts in Verbal Argument Project
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STATEMENT OF FOCUS

The Wisconsin Research and Development Center for Cognitive Learning focuses on contributing to a better understanding of cognitive learning by children and youth and to the improvement of related educational practices. The strategy for research and development is comprehensive. It includes basic research to generate new knowledge about the conditions and processes of learning and about the processes of instruction, and the subsequent development of research-based instructional materials, many of which are designed for use by teachers and others for use by students. These materials are tested and refined in school settings. Throughout these operations behavorial scientists, curriculum experts, academic scholars, and school people interact, insuring that the results of Center activities are based soundly on knowledge of subject matter and cognitive learning and that they are applied to the improvement of educational practice.

This Technical Report is from the Concepts in Verbal Argument Project in Program 2. General objectives of the Program are: to establish rationale and strategy for developing instructional systems, to identify sequences of concepts and cognitive skills, to develop assessment procedures for those concepts and skills, to identify or develop instructional materials associated with the concepts and cognitive skills, and to generate new knowledge about instructional procedures. Contributing to these Program objectives, the staff of the project developed a semiprogrammed course in verbal argument and related tests for use at the high school level. The project staff prepared the materials on the basis of an outline of concepts and critical skills developed from an evaluation of everyday discourse.

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ABSTRACT

Previous studies of language have indicated that various qualifier words (e.g., I know that, probably) attached to statements represent differing degrees of belief in the statements. Although particular differences in degree have been postulated, no research has compared qualified and unqualified statements to determine how they function in the reasons of arguments to affect receiver acceptance of argument conclusions.

Nine qualifiers were studied which represent three degrees of probability and three forms of wording: "certainly, it is certain, I know, probably, it is likely, I believe, possibly, it is possible, I suspect." The qualifiers were placed on reasons in arguments with three variations in location (on data, on warrant, or both). Hypotheses and questions focused on (1) qualifier degree, (2) interaction of degree and form, (3) interaction of degree and location, and (4) unqualified reasons for effects upon receiver responses.

A sample of eleventh-grade students responded to all possible pairs of the nine qualifiers and no qualifier on reasons of two contradictory arguments, marking the stronger conclusion on an eight-point scale. These scaled responses were analyzed by a 3 x 3 x 3 Analysis of Variance design and an ANOVA for paired comparisons.

The major conclusions were as follows. (1) Certainty degree words effected stronger conclusions than the other qualifiers, but unqualified statements are as strong as or stronger than certainty statements. (2) Word forms of qualifiers interact with degree in a complex way, with personal thought forms tending to be the stronger. (3) "Probably" has an ambiguous meaning between likely and possible degrees. (4) Content and logic factors influence different results for qualifiers in argument from the words viewed in isolation. (5) Though there is some stability in repeated responses, there are also individual variations and inconsistency of response by many students who tend to be the less intelligent and less able readers.

CHAPTER I

THE PROBLEM AREA

Overview

Qualifiers are single words or word strings which are frequently used with statements to modify the strength of belief in the view asserted by the statement. These have been discussed by theorists either as weakening the commitment to an assertion (e.g., "Probably . . .," "It's possible that . . ."), or as functioning to strengthen commitment to an assertion (e.g., "I know that . . .," "Certainly . . ."). In either case such words are imprecise representations of degrees of probability which are psychological rather than mathematical in nature. Since the very imprecision of qualifiers is a potential source of misunderstanding or misrepresentation in expressions, more information is needed on receiver responses to these words.

Language theorists (e.g., Austin, 1965; Joos, 1964; Toulmin, 1964; Urmson, 1956) have analysed the varying probability functions of particular qualifiers in everyday argumentative contexts, but their suggestions have not been tested through

actual receiver responses. One group of experimental studies (Cohen, 1957, 1960, 1964; Cohen & Hansel, 1956) examined the numerical probabilities that readers attributed to some qualifiers but these were in single statements only, not in full arguments with interrelated statements. Two studies (McGuire, 1960; Schunk, 1967) have examined empirically the belief in reason and conclusion statements of arguments and found that degree of belief in the reasons correlated with the degree of belief in conclusions derived from them. This research did not look at the qualifiers, however; it focused on personal or subjective belief in assertions that were presented without such probability terms. Therefore, there is a need to test the probability differences of qualifiers, as suggested by philosophical language analyses and experimental research, in single argumentative statements for the carry over of these degree differences to derived conclusions.

Statement of Problem

For clarity in understanding the review of studies in this problem area, the definition of central terms and concepts as well as the specific purpose of the current study might be helpful at this point. A structural model of argument (Toulmin, 1964) which recognizes qualifiers as a functioning element in everyday argument was adopted for this study. According to Toulmin, the three essential elements of an

argument are data (facts serving as grounds for the claim), warrant (principle licensing an inference from data to claim), and claim (conclusion being established). The qualifier is usually attached to the claim, to reflect the possible rebuttal (reservations or exceptions) to the claim, but qualifiers may also appear with the data and/or warrant.

The general purpose of this study was to examine qualified and unqualified (no qualifier attached) argument reasons (data and warrant) for their relative effects upon reader acceptance of the claim. The qualifier terms represent three degrees of qualification (certainty, likelihood, possibility) and three word forms (adverbial, personal thought assertion, impersonal pronoun-adjective). More specifically, nine qualifiers are of interest in this research--certainly, I know, it is certain, probably, I believe, it is likely, possibly, I suspect, it is possible. Additionally, the terms vary in their location of occurrence in the argument--i.e., attached to data or warrant or both of the reason statements. Specifically, three hypotheses and their related questions have been drawn from the literature:

1.0 The degree of the qualifier attached to reason statements in argument causes a corresponding degree of acceptance for the derived claim statement, with a descending order of strength for certainty, likelihood, possibility.

1.1 In relation to the three degrees of qualified statements, what degree of claim acceptance is caused by an unqualified (no qualifier words) statement?

2.0 A stronger or more emphatic qualifier word form interacts with qualifier degree such that it further raises (with certainty) or lowers (with likelihood and possibility) the claim acceptance.

2.1 Which qualifier word form (or forms) is more emphatic in interacting with the qualifier degree and what is the resulting pattern of interaction?

2.2 What specific qualifier words cause differing degrees of claim acceptance and in what order?

3.0 The qualifier location interacts with qualifier degree such that attaching the qualifier to both reason statements will produce higher (with certainty) or lower (with likelihood and possibility) claim acceptance than for either the data or warrant location.

3.1 Comparing the data and warrant locations, does one location cause a claim acceptance which is higher (with certainty) or lower (with likelihood and possibility) than for the other location?

General Review of Problem Area

Several language theorists have reflected on the use of various qualifying words occurring with statements. J.O. Urmson (1956) believes that certain "parenthetical" verbs (e.g., know, believe) and their corresponding adverbs (e.g., certainly, probably) function as warning signals:

> Thus 'I guess that this is the right road to take' is a way of saying that this is the right road, while indicating that one is just plumping [sic] and has no information, so that the statement will be received with the right amount of caution; 'I know' shows that there is all the evidence one could need; and so on. (p. 199)

Roland Hall (1958) says such words are used to modify or qualify claims to knowledge. Likewise, J. N. Findlay (1952) treats the probability function of qualifiers as signifying a person's strength of commitment:

> For to make assertions or to draw conclusions in that reserved, guarded manner which we express by adjectives and adverbs such as 'probably' and 'likely,' or by auxiliary verbs such as 'may' and 'might,' is everybody's birthright. (p. 218)

In short, we use qualifiers to reflect how much we are committed to the idea asserted or the degree of confidence we have in our knowledge on a point. So the qualifying words function as signals to the receiver about our strength of commitment to the statement.

This commitment concept is very similar to Cohen's (1964) notion of psychological probability in language. He views qualifiers as expressions of uncertainty about assertions, as assessments of the probable truth of assertions. These are probabilities of a psychological rather than a mathematical nature, mental states of uncertainty expressed verbally which do not follow exact numerical laws; they cannot be given a precise quantitative value and are therefore somewhat gross, imprecise indices of probability. Cohen (1960) notes that such verbal imprecision is not necessarily bad because it permits expressing opinions in situations where exact statements or precise values cannot be given. Qualifiers are imprecise but nevertheless useful, or even necessary, in a world where

quantitative precision is not always possible. Stephen Toulmin (1964) likewise believes in the utility of such indefinite terms in argument; in fact, he deems qualifiers of such importance that they are an integral unit in his model of the argumentative process. He points out, however, that the qualifiers are not so indefinite as to defy definition:

> This does not imply that no meaning can be given to the term: [sic] 'probability' has a perfectly good meaning to be discovered by examining the way in which the word is used in everyday and scientific contexts alike, in such phrases as 'there is a high probability, or a probability of 4/5, that . . .' and 'in all probability.' It is with such an examination that we must begin the philosophy of 'probability.' (p. 70)

Although words which express indefinite probabilities are not precise numbers they do seem to have some fairly standard uses, and it is these common uses of the terms which can and should be examined. Cohen and Hansel (1956) point out that although we often use such qualifiers because we cannot give a precise numerical value, we can still ask the user within what limits the probability value of the word is intended to lie and what the mid-value of the range might be. Or, at another point in the communication process, we can ask the receiver what mid-value and range of probability the term holds for him, which was the point of the present study.

The precision problem of qualifiers may be viewed as a particular case of the general problem of language expressed

by Eric Buyssens:

> Words are not trustworthy because they don't express facts; they serve to build up different sentences. And sentences express abstractions, based on our thoughts about facts; when we hear sentences, we first have to find out their meanings, secondly to reconstitute the thought that induced the speaker to use them, and finally to verify the thought by confronting it with the facts. If we can't call to mind any past experience about the facts concerned, we are wholly dependent on words and liable to the grossest mistakes. (1954, p. 163)

In other words, the meaning of qualifiers is in large part a function of the associations in the listener or reader's mind, and to the extent that a respondent lacks knowledge on the subject asserted he must rely on the probability words. For example, Ray and Zavos (1966) modelled the process of response to arguments as including four factors of probability: (1) probable fact, or agreement of the sentence with the physical facts; (2) probability qualifiers, within the sentence; (3) probable derivation, between the reasons and conclusion; and (4) subjective probability or mental degree of belief. With such complexity in argument, the encoder and decoder may differ in the likelihood attached to an argued conclusion according to their differing experiences or beliefs at one or all of the four points noted. For example, the research of Cohen and associates has found wide variability in meanings attached by readers to the qualifier "probably"--ranging from "certain" to "equally likely or not likely" (Cohen, 1960, p. 169).

With such variability of meanings, the potential encoder-decoder discrepancy is noted by Hughes and Duhamel (1966). Jargon(in which category they place some qualifiers) is the technical language of a trade or profession; but with a general audience, a communicator who uses jargon "instead of a more precise word invites his audience to bend that word to fit into its own categories and preconceptions . . ." (pp. 134-135).

As noted, such verbal imprecision in qualifiers may be of great utility in everyday arguments, but the potential for decoder misunderstanding might also be misused as a cover for the initiator's actual knowledge or feeling about the assertions--i.e., to make them appear stronger or weaker than they are. An encoder may, as Hughes and Duhamel (1966) note, invoke such terms to adopt a "pseudo-scientific pose." For example, Cohen and Hansel (1956, p. 57) report a case of an author using "no doubt" to mean "probably (with a propagandist insinuation of a certainty that cannot be openly claimed; a misuse rapidly becoming an accepted idiom)." In the words of Cohen, ". . . no writer or speaker has the right to hide permanently behind a screen of indefiniteness" (1960, p. 167). In short, the imprecision in the probabilities expressed by qualifiers opens the way for (1) misinterpretation, in which the respondent attaches a different meaning than the initiator; (2) uncertainty of the respondent as to what probability to

associate with the qualifying words; and (3) misrepresentation, by an initiator using the vagueness of the qualifiers to suggest probabilities which are not accurate. In the interest of better understanding in communication and of improved critical sensitivities to arguments, the qualifier words in common usage must not be overlooked. Thus, to the extent that relative orders of magnitude can be established for qualifiers, such magnitude estimates should be widely known in order that the potential gap between initiator and receiver might be reduced, thereby guarding against misunderstanding, misuse, and further uncertainty.

Research in the area of qualifiers in argument has made some progress in specifying degrees of probability commonly associated with qualifiers, but much remains to be done. Stephen Toulmin and other language theorists (Austin, 1965; Findlay, 1952; Hall, 1958; Joos, 1964; Urmson, 1956) have offered detailed analyses of the ordinary uses of many of these probability terms,[1] suggesting differences in degree among them. They have considered the effects of certain qualifiers upon an assertion contained within the sentence, but they have given little consideration to qualifier usage for possible effects beyond the sentence--namely, upon other statements in an argument. In addition, such theoretical analyses of language use have not been examined empirically with receiver responses to

---

[1] Specific differences, established philosophically and empirically, will be treated in more detail under the respective hypotheses below.

arguments containing qualifiers. The theoretical notions on the use of certain words may be compared to how they are actually responded to by receivers to determine the behavioral reality of those notions. Some empirical investigations of qualifiers (Cohen, 1957, 1960, 1964; Cohen & Hansel, 1956) have been conducted focusing on the meanings readers associate with certain of the words. These studies have generally found that the words could be roughly quantified and have also demonstrated some degree relationships similar to those postulated by the language theorists. This line of research also has been limited, however, to qualifiers in single isolated statements and has not examined their inter-sentence effects in an argument.

Other research has examined the degrees of belief in each of the sentences in an argument to determine to what extent belief in the conclusion is related to belief in the statements from which it is derived. In addition to the probability reflected in single statements with qualifiers, there is, as Ray and Zavos (1966) noted, the probability of the conclusion drawn from such statements (probable derivation). Findings indirectly relevant to this derived probability are presented in studies of "atmosphere effects" in syllogisms; it seemed that, regardless of the formal validity, (1) Ss were more prone to believe conclusions from universal premises

("All x is y") than from particular premises ("Some x is y"), and (2) they structured conclusions using the same term ("all" or "some") that appeared in the premised (Frase, 1966a, 1966b; Morgan & Morton, 1944; Sells, 1936; Woodworth & Sells, 1935). Terms such as "all" or "some" have been viewed as indicators of degrees of probability similar to qualifier terms, such as "certainly" and "probably", but it is not altogether clear that this is a valid view. More directly relevant to the question of derived probability, two studies examined the relation of personal belief in statements to personal belief in derived conclusions as predicted by quantitative probability models. Both studies had Ss mark a scale indicating their degree of belief in each of the listed assertions which were the conclusions and supportive reasons for arguments. Using the classical syllogism as his model for arguments presented to high school upper classmen, William McGuire (1960) found that the mathematical product of probable belief in the major premise and probable belief in the minor premise correlated positively with probable belief in the conclusion. Using the Toulmin model of argument with college students, John Schunk (1967) similarly found belief in the claim to be a multiplicative function of the probability associated with the data and warrants supporting the claim. Both studies obtained only low to moderate correlations initially (.28 to .48), but after partial-

ling out other factors (e.g., statement desirability measures) generally high correlations were obtained between the reasons and conclusion. Although these two studies found a clear interrelation of reason and conclusion probabilities in arguments, the statements of a particular argument were presented separately in lists which included statements from other arguments as well; Ss in both studies did not view and respond to each argument as a structured unit. With this procedure Ss may not have been fully cognizant of the functional relationships of the statements while responding to them and a causal relationship cannot be inferred from the correlation analysis. More importantly, neither study examined qualifiers; probability words were not used as a factor in belief in statements, although Schunk (1967) recognized the need for such an examination. He suggested for further study that qualifier elements be incorporated into the model as verbal expressions of probable belief similar to the subjective probabilities of statements which he examined.

In summation then, philosophical and experimental language research (1) has revealed differences in the degree of psychological probability expressed by various qualifiers and (2) has found that the degree of subjective belief in given statements is associated with one's belief in a claim drawn from those statements. These two lines of research need

to be combined to see if the degree of belief in a statement as reflected by qualifier words transfers to the claim in a functional unit of argument with (a) the relative degrees as expected from the previous single statement research and (b) the combining of probabilities as expected from the latter argumentative research.

Justification of Hypotheses

The extent to which certain probability terms have been examined and the suggestions of what they express provide the groundwork for the hypotheses and questions to be investigated.

Hypothesis 1.0: The degree of the qualifier attached to reason statements in argument causes a corresponding degree of acceptance for the derived claim statement, with a descending order of strength for certainty, likelihood, possibility. Urmson (1956) views qualifiers as words which can be arranged on a scale for the degree of commitment to the conjoined statement--e.g., the words "guess, suspect, believe (probably), know (certainly)" form an ascending scale. J. L. Austin (1965), likewise, hypothesizes a difference in degree between "know" and "believe." Research reported by Cohen and Hansel (1956) supports the suggested difference between "probably" and "certainly" when used as a scale by children. In similar research with adults, "probably will" meant a 55 percent chance, "is likely to" a 60 percent chance, and "is certain to" a 70

percent chance in the context of assertions about the weather or politics (Cohen, 1957). Several theorists also suggest a difference in degree between "necessary" (or certain) and "possible" (Toulmin, 1964; Jorgensen, 1954; Joos, 1964).

It is reasonable to expect that if qualifiers differentially strengthen or weaken the belief in a statement, then claims inferred from that statement would be similarly strengthened or weakened--just as McGuire (1960) and Schunk (1967) found belief in supportive statements to be reflected in the claim. Toulmin implies such inter-sentence effects when he indicates that qualifiers may be attached to the data and warrant and the qualifier on a claim reflects the degree of force or acceptance conferred upon the claim by the data and warrant statements in the argument (1964, pp. 100-101). Although Toulmin doesn't elaborate this point, it indicates that claim strength is a function of both the reasoning process and the probability of each supporting statement as indicated by qualifiers.

1.1 In relation to the three degrees of qualified statements, what degree of claim acceptance is caused by an unqualified statement? Do receivers view the unqualified assertion as certain fact, as only probable, or as some degree in between these qualifier degrees? Although there is considerable agreement among researchers on the degree differences of qualifiers,

there are only a few who comment briefly on the comparison of qualified and unqualified statements. For example, Hall (1958, p. 54) suggests that qualifiers are "special linguistic devices for adding to, cancelling or altering the commitments which statements made without them would have involved." As for "cancelling" commitments, Urmson (1956) considers the effect of some qualifiers (like "I guess" or "I suppose") to be that of weakening the claim to truth implied by a simple assertion. Toulmin (1964), in a similar discussion, specified "probably" and "perhaps" as two such terms which function this way. On the other hand, Austin (1965) notes an "adding to" function in degree for words such as "know" or "certain." "When I say 'S is P,' I imply at least that I believe it, and, if I have been strictly brought up, that I am (quite) sure of it . . ." but saying 'I know' is more definite and involves a complete commitment; "When I say 'I know,' I give others my word; I give others my authority for saying that 'S is P'" (Austin, 1965; pp. 364-365, italics in original). Thus particular qualifiers may represent degrees of strength different from the degree implicit in the absence of qualifiers, but the analysis on this point is limited to the few cases just cited and this question has not been examined via controlled empirical comparison of qualified and unqualified sentences within arguments.

Hypothesis 2.0: A stronger or more emphatic qualifier

word form interacts with qualifier degree such that it further raises (with certainty) or lowers (with likelihood and possibility) the claim acceptance. Some of the theory and experimentation reviewed has noted the various word forms that qualifiers may take but little attention has been given to possible differences between these linguistic variations. Although specific words and forms have been treated as alternatives expressing similar degrees of probability, it may be erroneous to assume that they are synonymous. On this point Urmson (1956, p. 200) cautions that even though the qualifier verbs have their corresponding adjective and adverb forms, they should not be taken as synonyms. He notes, in particular, how an adverb (e.g., probably) is more impersonal than its corresponding verb (e.g., believe), suggesting that what is asserted with the former would be regarded by anyone as probable whereas "I believe" shows only the individual's assessment of the assertion. His analysis might be extended to the impersonal pronoun "it" with the adjective form as, like the adverb, reflecting a universally accepted assessment. As McGuire (1960, p. 96) noted, research indicates people tend to accept statements adhered to by everyone.

Contrary to this analysis of word forms, Austin (1965) suggests that "I know" presents a strong personal commitment conveying greater acceptability than "I am certain"; with the former you imply you can prove it, while the latter carries less

risk of censure upon being mistaken. In these cases the issue is confounded by the word differences also and is not simply a conflict of personal and impersonal form. Nevertheless, the focal point of both analyses is the individual vs. general (or universal) word form as having a stronger or more emphatic effect. Clearly, Austin's notion of personal commitment is in conflict with Urmson's universality principle. So here are two interpretations of word form leading to different predictions of claim strength depending upon the degree of the qualifier--i.e., "I know" stronger than "certain" but "probably" stronger than "I believe".

Both interpretations indicate fine distinctions among the qualifier forms as they interact with qualifier degree; but the question remains as to (2.1) which qualifier word form (or forms) is the more emphatic in the interaction. Is it the adverb or impersonal pronoun-adjective form as Urmson suggests, or is it the personal thought form as suggested by Austin? In other words, since the two discussions suggesting the interaction conflict as to which form has a greater strengthening or weakening effect, it is not feasible to predict the precise pattern of the interaction.

The variations in degree and word form produce nine different qualifying terms. So an alternative analysis of the form-degree interaction would focus on comparison among the

words to answer Question 2.2, what specific qualifiers cause differing degrees of claim acceptance with what ordering of terms? In other words, are all of the differences between specific terms as suggested in the prior studies supported by S responses in this study, and if not, what differences are revealed? It may be, for example, that certain gross differences exist between the probability terms (e.g., probably, likely, believe) and other degree terms but the probability terms may not be significantly different from each other. Note that Cohen (1957) found only a five percent chance difference between "probably will" and "is likely to." Such fine differences between similar degree terms generally have not been considered except for Urmson's comment that the qualifier verbs are not to be construed as synonymous with their corresponding adverbs.

Hypothesis 3.0: The qualifier location interacts with qualifier degree such that attaching the qualifier to both reason statements will produce higher (with certainty) or lower (with likelihood and possibility) claim acceptance than for either the data or warrant location. The work of both McGuire (1960) and Schunk (1967) as well as the evidence of "atmosphere effects," cited earlier, indicate that the probabilities associated with both reason statements of an argument combine to determine the probability of the claim. In a similar way, when probability is represented verbally in the reasons, it seems

that the strength attached to the claim would reflect the combining of the degrees in such qualifiers. Thus, in an analogue to the mathematical combining of probabilities (by Schunk and McGuire) and following the degree differences postulated earlier, attaching "certainly" to both reasons would produce a stronger claim than with "certainly" on only one reason; but attaching "probably" or "possibly" to both reasons would lead to a weaker claim than with "probably" or "possibly" on only one reason. In short, the claim strength is affected by both the degree of the qualifier and whether one or both reason statements are modified by it.

3.1: Comparing the data and warrant locations, does one location cause a claim acceptance which is higher (with certainty) or lower (with likelihood and possibility) than for the other location? The low to moderate correlations between belief in reasons and conclusions obtained by both McGuire and Schunk raised the possibility of other factors influencing their results and questioned whether their simple multiplicative models were adequate. Both researchers found an increase in the correlations when the desirability of the various statements was considered. In addition, Schunk examined the salience of given data statements to claims and found this to be an additional factor in the correlations. Is it possible, also, that the impact of a qualifier upon the claim is in part a function of

the position of the qualified reason statement in the argument--i.e., first or second in position, general or particular statement, data or warrant? Toulmin (1964) ascribes very different functions to the data and warrant of an argument (see p. 2 of this chapter). Certain differences in function might make the qualification of one statement more potent in determining the probability of the claim.

For example, Schunk (1967) noted that in his study the warrants were beliefs already held while the data were new beliefs given. This is perhaps often the case in everyday argument, and as such a qualifier might have little effect on the warrant; but on the data, a qualifier might be potent in formulating the new belief. On the other hand, McGuire (1960) observed that the major premise (comparable to the warrant in its generalization quality) contributed more than did the minor premise to changes (with repeated testing) toward consistency of premise and conclusion beliefs. It may be that the generalization of the major premise (or warrant), as the foundation of the argument or the essential linking inference in the argument, makes this statement more important in arriving at the strength of the claim.

Here then are two contrary hypotheses of apparently equal validity, but the question of which statement is more potent remains a dilemma since this question was not directly tested

by McGuire or Schunk. So the current investigation of the qualifiers' effects according to their occurrence in the argumentative structure (degree-location interaction) would explore whether either of these predictions is valid. For example, following McGuire's finding, one would predict that (1) the certainty mean for warrant location would be greater than the certainty/data location mean, while (2) possibility/warrant location would be less than possibility/data location. These two differences would be reversed if Schunk's analysis is valid. In either case an interaction results but the nature of that interaction differs.

Summary

Previous studies of language have indicated that various qualifiers attached to statements in an argument will have differential effects on the strength with which the derived claim is accepted. Although certain differences in degree function among these probability terms have been postulated, no research has been conducted to compare qualifiers and unqualified statements to determine how they function in the reasons of arguments to produce receiver acceptance of argument claims. Specifically, three specific hypotheses and four related questions have been drawn from the literature to focus on the effects of (1) qualifier degree, (2) the interaction of qualifier degree and form, and (3) the interaction of qualifier degree and location upon reader acceptance of the argument claim.

CHAPTER II

METHOD

An experimental methodology was used to examine the effects of three independent variables upon one dependent variable in argumentative instances. The Toulmin (1964) model of argument was used as the structure of all instances of argument presented to Ss. In this study, the dependent variable related to the claim, which was always unqualified, and the qualifiers were attached to the reasons (data and/ or warrant) according to the three independent variables.

Independent Variables

Degree. (D) Qualifiers were selected to represent three degrees of probability: certainty (CD), likelihood (LD), possibility (PD).

Form. (F) Qualifiers were selected to represent three word forms: adverb (AF), personal thought assertion (PF), impersonal pronoun-adjective (IF).

Location. (L) Qualifiers were attached to one or more of the reason statements according to three variations: to the

data only (DL), to the warrant only (WL), same qualifier to both data and warrant (BL).

Nine words and phrases represented the variations in qualifier degree and form: Certainly, I know that, It is certain that, Probably, I believe that, It is likely that, Possibly, I suspect that, It is possible that. Although there are hundreds of qualifying words and word strings available for study, these qualifiers were selected for study because (a) they are commonly used in everyday argument--e.g., these degree words have been encountered with high frequency in various word counts which have been conducted[1] --and (b) they have received particular attention in the previous research and theory surveyed in Chapter One.

Additionally, a null or no qualifier condition--i.e., an unqualified statement--was used for comparison with the nine qualifiers.

The subject matter content of the argument is a relevant variable, which was controlled by special techniques described below.

Dependent Variable

The relative strength of acceptance of the claim was obtained by pairing each of the nine qualifiers (in the argument

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[1] These qualifier words generally occurred with a frequency of 50 to 100 per million words in the Thorndike-Lorge count and 18 to 198 per 250,000 words counted by Howes; these are considered to be moderate to high frequencies for a word. The word "suspect" was the one exception, not appearing on either list.

contexts) with every other and the null to determine the stronger claim in each case (10 x 9/2 = 45 pairs). Scheffé's (1952) method for scaling responses to paired comparisons was modified to exclude the zero point which gives the observer an excuse to make no decision.[2] Thus Ss responded on an eight point scale placed between each pairing of conditions; they marked a scale blank near the claim they viewed as the stronger of the two, with the value of the blank indicating how much stronger. The ends of the scale were assigned a value of four with the values descending to one for the two middle blanks. Thus the preferred (stronger) claim received a positive score (according to the blank marked) and the nonpreferred received the corresponding negative score. For example, the scale marking:

Claim A ___ X ___ / ___ ___ ___ ___ Claim B

would be scored as +3 for Claim A and -3 for Claim B. The use of these scores will be explained further in the Data Analysis section of this chapter.

Subjects

The sample was 111 students in six eleventh-grade[3] social studies classes at Monroe (Wisconsin) Senior High School. A

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[2] See Jackson and Fleckenstein's (1957) recommendation on this point; they note that if no real difference exists between i and j, then chance alone would predict 50 percent of the Ss preferring each with the weakest (+1) blank marked.

[3] Five students were seniors and the rest were juniors.

high school sample was selected because of the experimentor's interest in secondary education as the focus of the project on the evaluation of verbal argument, of which this study was a part (see e.g., Allen, Feezel, and Kauffeld, 1967). The students in each class were randomly assigned, in approximately equal proportions, to three groups corresponding to the three levels of qualifier location in order to yield equal totals for each location group; e.g., 37 Ss in group DL responded to argument pairs with variations in the data statements only.

Techniques

Preparation of argument pairs. Arguments were constructed to manipulate the independent variables while controlling certain relevant variables. One factor which had to be carefully considered was the possible effect of S's attitude toward topic upon acceptance of claims. Studies generally have shown that attitudes and personal opinions on topics affect the response to arguments. However, several studies (Henle, 1962; Lefford, 1946; Morgan & Morton, 1944; Thistlethwaite, 1950) indicate that when subject matter is neutral or not personally relevant Ss are more able to assess the validity of syllogisms without topic bias. If arguments are structured which refer to unfamiliar and remote topics or organizations, they are not likely to arouse strong emotional or personal feelings. To introduce some control of this factor, the arguments were con-

structed with ordinary everyday topics which were not emotionally charged or highly personal, and fictitious names of individuals and groups were used.

Additional content control was introduced with the paired comparison technique. The topic of both arguments in a pair was the same except that the claims were direct opposites or contradictories (e.g., "Harry is a British subject", "Harry is a French subject") derived from differing information on the subject matter (e.g., "Harry was born in Bermuda," "Harry was born in Haiti"). A large number of topics were constructed initially but only nine topics were used which had been adjudged by three reviewers[4] to be pairs of contradictory arguments having equal strength, plausibility, and desirability, both within and between pairs (see Table 1 for the list of nine topics).

These nine different topics with the paired contradictory arguments were systematically assigned to the 45 pairings of qualifiers (or degree-form conditions) and null in such a way that a topic was used with each of the nine qualifiers and the null only once. Since this amounts to 10 conditions taken two at a time, each topic was replicated five times in the 45 pairs; this combining of topic and qualifier pairs was accomplished by the following rotation scheme:

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[4] All three reviewers were graduate students in speech with interest in and a background of studying argumentation as well as experience competing successfully in collegiate debate. They were given as much time as needed with instructions to mark (1) any arguments not equal in strength, desirability and plausibility to the matched argument or to any other argument in the set and (2) any matched arguments not truly contradictory.

Degree-Form and Null Conditions		45 Pairings of 10 Conditions
CD-AF	1	-
CD-PF	2	A -
CD-IF	3	B I -
LD-AF	4	C B H -
LD-PF	5	D C A G -
LD-IF	6	E D C I F -
PD-AF	7	F E D A H G -
PD-PF	8	G F E D I H B -
PD-IF	9	H G F E B A I C -
Null	0	I H G F E B C A D -

Topics lettered A - I

1 2 3 4 5 6 7 8 9 0

Conditions

It was felt that this technique would provide some variety of subject matter with some topic control in that (1) each qualifier and the null appeared with all nine topics and (2) each topic appeared an equal number of times (five). Although topic variations would be confounded with a given pairing of conditions, the potential effects of topics on response to qualifiers was evenly distributed and the repeated occurrences of a topic made it possible to get an estimate of any topic effects. Admittedly, perfect topic control could have been accomplished by the use of the same topic throughout, but this would be monotonous, unrealistic, and would probably draw such attention to the qualifiers that Ss would respond only to them with argument context no longer relevant to the task.

In constructing the task booklets, order was also varied systematically within the pairings. For two of the five occurrences of a topic the position of the contradictory arguments was reversed so that argument x was on the right of the page. Also, as much as possible each qualifier was placed with the left argument approximately half (4 or 5) of the times it occurred and on the right the other half.

Booklets. Three different booklets were constructed, one for each of the variations in qualifier location (DL, WL, BL--all three forms of booklets are presented in Appendix A). Every booklet cover was marked with an A, B or C to designate DL, WL, or BL, respectively. For example, the following is one item as it appeared in each of the three booklets showing the variations in qualifier location:

It is certain that Ellen's college education is financed entirely by her part-time work. Students who have to work part-time do not have much study time. Therefore, Ellen has little study time.

-DL- Probably Ellen has a full expense scholarship in biology for her college education. Students with full scholarships have quite a bit of time for their studies. Therefore, Ellen has ample study time.

Ellen's college education is financed entirely by her part-time work. It is certain that students who have to work part-time do not have much study time. Therefore, Ellen has little study time.

-WL- Ellen has a full expense scholarship in biology for her college education. Probably students with full scholarships have quite a bit of time for their studies. Therefore, Ellen has ample study time.

It is certain that Ellen's college education is financed entirely by her part-time work. It is certain students who have to work part-time do not have much study time. Therefore, Ellen has little study time.

-BL- Probably Ellen has a full expense scholarship in biology for her college education. Students with full scholarships, probably, have quite a bit of time for their studies. Therefore, Ellen has ample study time.

It may be noted from this item and others that in the BL booklet the placement of a qualifier in the sentence phrasing was varied and "that" was sometimes dropped. This was done to lend variety and also reduce the obviousness of qualifiers on both reasons to encourage careful reading of the entire argument; it seems unlikely that such minor variations would confound the effects of the qualifier variables.

Except for these variations each booklet contained the same material in the same order. First were brief written instructions--including a definition of argument, description of the response task, and an example argument pair.

Second, 60 argument pair items were presented which included the 45 pairs of qualifier conditions, verbatim repeats of five of these (items #33/48, 41/49, 19/58, 21/59, and 37/60) and 10 filler items. The filler items were composed as follows:

1) new topic (not one of the nine used for conditions), extraneous quantifying terms (not the qualifiers studied)--three items (#6, 39 and 43);
2) new topic, both arguments unqualified with one "bad" argument[5]--one item (#11);
3) new topic, same qualifiers in both arguments, one "bad" argument--one item (#29);
4) new topic, different qualifiers in pair, "bad"

argument with the seemingly stronger qualifier--one item (#34);

5) detractor items, a prior condition pairing, modified so that the argument with the seemingly stronger qualifier is rephrased as a "bad" argument--four items (#16, 22,23, and 38).

The repeats were used as a check on consistency (reliability) of a S's response; the filler pairs were intended to disguise the variations of actual conditions and to lend further variety to the task situation. The four detractor items, described in point 5 above, were used as a check on S awareness of the qualifier variations, which will be explained later under Additional Analyses. The 45 condition pairs were randomly ordered with the repeats and fillers scattered among them except that fillers were placed predominantly near the beginning of the booklet and repeats were kept generally near the end. The complete design of the booklets is shown in Table 2.

Third, a comment page was provided for Ss to indicate how they made their choices in the pairs and any difficulty they had in doing so. This page was designed to yield further data on Ss' awareness of the qualifier terms, topic, or distracting elements of the filler items; such data would constitute a secondary

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[5] A "bad" argument was operationally defined as one with reasoning errors (such as irrelevant statements or faulty concluding from alternatives) which would be obvious to a careful reader in the age group of the sample--e.g., "Gov. Goodman has been staying home to speak at local banquets in his state. Speaking at banquets indicates a good after-dinner speaking ability. Therefore, Gov. Goodman is running for re-election."

analysis and was not a part of the major research design.

Finally, 36 (all possible) pairs of the nine qualifiers, exclusive of their argumentative contexts, were presented in random order with the same response scale as used for the argument pairs. This is included for comparison with the relative strength of qualifiers when presented in the arguments and also represents a secondary analysis, not a part of the main design.

Each pair was presented with the arguments (or the qualifier words in the last section of the booklet) at the extreme right and left of the page and the eight point scale (eight blanks three spaces wide) placed between the two. Three argument pairs were presented per page and all pages of the booklets were thus half-sheet size (8 1/2" x 5 1/2").

Procedure

The study was conducted over six consecutive class periods on May 29, 1968,in one classroom at the Monroe Wisconsin Senior High School. Ss responded to the experimental task in their classroom during their regular class periods. The DL, WL, and BL booklets were distributed to them randomly and they were told not to open the booklets yet but to write their full name, age and sex in the places provided on the cover. Next they were cautioned to read the instructions, example item, and all pages carefully and to work through the booklet pages in the order in which they were presented, without looking forward or back.

The grade level, class period, and approximate time taken to complete the booklet was recorded on the cover for each S as he finished and turned in the booklet. At a convenient time about one month later, the school staff recorded the individual reading and intelligence test scores available from school records. All of this organismic and procedural data was used for comparison with the three qualifier variables in a subsequent correlation analysis.

Primary Data Analyses

The scores on the dependent variable were obtained by assigning the appropriate numbers and signs to the arguments in each pair according to the scale blank marked by S (procedure outlined in Dependent Variable section of this chapter). Occasionally a response to an item was missing, and since the statistical analysis could not handle missing data, it was necessary to interpolate responses. The mean score for all Ss responding to that pair of conditions was rounded to the nearest whole number (retaining the sign) and entered for the missing data on that item. This procedure had the effect of approximating the actual responses which could have been made to the item while reducing the variance, thus biasing the results toward no significant differences on the variables or increasing the probability of a Type II error--failing to reject the null hypothesis when it is false.

TABLE I

The Nine Topics With
Contrary Arguments

Argument x		Argument y
Gov. Goodman has been making a series of speaking tours around the U.S. Extensive speaking around the nation in an election year indicates interest in the Presidency or Vice Presidency. Therefore, he is interested in the Presidency or Vice Presidency.	(A)	Gov. Goodman has been staying home to speak at many banquets in his state. Frequent speaking around the state in an election year indicates interest in the Senate or in re-election. Therefore, he is interested in re-election or a Senate seat.
Manitoba is going to buy corn on the world market. The purchase of corn on the world market results from a corn crop failure. Therefore, Manitoba has suffered a corn crop failure.	(B)	Manitoba is planning to sell corn on the world market. The sale of corn on the world market results from a bumper crop of corn. Therefore, Manitoba has had a bumper corn crop.
The English Dept. at State U. will begin its major study of ghetto grammar this fall. Large research studies in poverty areas result from the granting of federal funds. Therefore, they have received federal funds.	(C)	The English Dept. at State U. will cancel its major study of ghetto grammar this fall. Cancellation of studies in poverty areas results from the cutting of federal funds. Therefore, their federal funds have been cut.

From the information given on it, Plainfield High is a public school. Public schools are supported through local taxes. Therefore, the education of Plainfield High students is financed by local taxation.

(D) From the facts released on it, Plainfield High is a private school. Private schools are backed by tuition and donations. Therefore, the education of Plainfield High students is paid for by tuition and donations.

/ _____

Ellen's college education is financed entirely by her part-time work. Students who have to work part-time do not have much study time. Therefore, Ellen has little study time.

(E) Ellen has a full expense scholarship in biology for her college education. Students with full scholarships have quite a bit of time for their studies. Therefore, Ellen has ample study time.

/ _____

The governor will sign the new school construction bill, No. 617. The governor signing a bill makes it law. Therefore, the school construction bill will become a law.

(F) The governor will veto the new school construction bill, No. 617. The governor vetoing a bill sends it back to the legislature. Therefore, Bill No. 617 will return to the legislature.

/ _____

The cloth-bound book Hoopla is being printed in paperback. Books are printed in paperback if they sold well in cloth-bound editions. Then Hoopla sold successfully in cloth-bound form.

(G)

The cloth-bound book Hoopla is now out-of-print. Books which are out-of-print have not sold well in the previous edition. Then Hoopla did not sell very well in its cloth-bound edition.

— — — — — — — — / — — — — — — —

Johnny turns his classwork in on time. Turning work in on time helps one to do well in courses. So, Johnny will do well in his courses.

(H)

Johnny turns his classwork in late. Turning work in late contributes to doing poorly in courses. So, Johnny will do poorly in his courses.

— — — — — — — — / — — — — — — —

According to indications, India supports the government of Burma. Nations supporting Burma's government also favor area mutual defense agreements. Therefore, India wants a mutual defense pact.

(I)

According to indications, India opposes the government of Burma. Countries opposing Burma's government also dislike cooperative defense pacts. Therefore, India opposes a mutual defense plan.

— — — — — — — — / — — — — — — —

TABLE 2

Design of Argument Pairs in Booklets

		Margin			
		Left		Right	
Item	Topic	Argument	Qualifier	Argument	Qualifier
1	C	x	ISus	y	ItsL
2	I	x	Null	y	Cely
3	E	x	ItsC	Y	Prly
4	D	x	Null	y	ItsC
5	G	x	ItsC	y	ItsL
6	J*	x	- -	y	- -
7	B	x	Prly	y	ItsP
8	A	x	ItsL	y	Null
9	I	y	ItsP	x	IKno
10	D	y	ISus	x	Poly
11	M	x	- -	y	- -
12	C	y	ItsC	x	IKno
13	I	x	ISus	y	ItsC
14	E	y	IKno	x	IBel
15	G	y	Poly	x	IKno
16	K	(repeats #1 with modification)			
17	I	x	IBel	y	ItsL
18	A	y	Prly	x	ISus
19	F	x	ItsC	y	IBel
20	A	y	ItsP	x	ItsC
21	G	x	ItsP	y	Null
22	L	(repeats #4 with modification)			
23	N	(repeats #18 with modification)			
24	H	x	ItsL	y	Prly
25	D	x	IKno	y	Prly
26	B	x	ItsL	y	Poly
27	E	x	Null	y	ISus
28	H	y	IBel	x	Null
29	O	x	- -	y	- -
30	B	y	Cely	x	ItsC
31	C	x	Prly	y	Cely
32	F	y	Null	x	Prly
33	E	y	Cely	x	ItsL
34	P	x	- -	y	- -
35	G	y	IBel	x	Prly
36	A	y	Poly	x	IBel
37	H	x	IKno	y	ISus
38	Q	(repeats #26 with modification)			

*Topics J through S are additional ones for fillers or modifications of other topics (detractor items).

(Table 2 cont.)

Item	Topic	Argument	Qualifier	Argument	Qualifier
39	R	x	- -	y	- -
40	D	y	ItsP	x	ItsL
41	I	y	Poly	x	Prly
42	B	x	Null	y	IKno
43	S	x	- -	y	- -
44	G	y	Cely	x	ISus
45	A	x	IKno	y	Cely
46	F	y	Cely	x	Poly
47	B	y	IBel	x	ISus
48			(repeat of #33)		
49			(repeat of #41)		
50	H	y	Cely	x	ItsP
51	C	y	ItsP	x	IBel
52	F	x	IKno	y	ItsL
53	E	x	Poly	y	ItsP
54	D	x	IBel	y	Cely
55	F	y	ISus	x	ItsP
56	C	x	Null	y	Poly
57	H	x	Poly	y	ItsC
58			(repeat of #19)		
59			(repeat of #21)		
60			(repeat of #37)		

Analysis One

For this analysis, the positive and negative pair scores for each of the nine qualifier conditions were summed (taking sign into account) yielding nine condition scores per S in each of the three location groups. All argument pairs containing the null condition were omitted for this analysis and each condition score was obtained by summing across the remaining eight pairs giving a possible score range of +32 to -32 per condition for each S. The data were cast into a 3 x 3 x 3 Analysis of Variance model with repeated measures on degree (CD, LD, PD) and form (AF, PF, IF), independent groups on location (DL, WL, BL), and 36 Ss per group as replicates.[6]

Analysis of Variance Design

	CD			DL			PD		
	AF	PF	If	AF	PF	IF	AF	PF	IF
DL n=36									
WL n=36									
BL n=36									

N=108

The BMD08V Analysis of Variance Program (Biomedical Computer Programs, U.C.L.A.) was used with the IBM 7040-7090 computer system at the University of Washington to analyze the data. Analysis One was used to examine the three hypotheses and Questions 2.1, 2.2, and 3.1.

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[6] Although there were originally 37 Ss per group, one S from each of the three groups had to be omitted because of excessive missing data or incorrect marking of the scales.

Analysis Two

An alternative analysis of variance for paired comparisons was calculated as outlined by Scheffe' (1952) to examine Question 1.1 comparing the unqualified condition with the degree of each qualifier. This procedure utilized the data from all 45 pairs by tabulating the number of Ss marking each of the eight scale points for every pair. The analysis of variance then treats the 10 conditions (qualifiers and null) as the main effects analysis. Ordinarily the Scheffe' ANOVA design includes an order effects analysis with each pairing of conditions presented twice to reverse order in the pair (e.g., 1-2 and 2-1). This variation was omitted from the study since repeating every one of 45 pairings was considered impractical and not warranted from any indications that order would be significant enough to isolate. Instead, order was varied systematically as described in the Techniques section of this chapter. Without order variations, the ANOVA procedure was modified as follows. When order is included, mean preference of i to j for each order is calculated ($\hat{\mu}_{ij}, \hat{\mu}_{ji}$) and the average preference of i to j is calculated from these means ($\hat{\pi}_{ij} = 1/2[\hat{\mu}_{ij} - \hat{\mu}_{ji}]$; when order is omitted, there is only one mean preference ($\hat{\mu}_{ij}$), with $\hat{\mu}_{ij} = \hat{\pi}_{ij}$ and average preferences and order effects are not subtracted from the total variance in the analysis. Otherwise the procedure is the same and this modification is very straightforward and should not affect the accuracy or validity of the ANOVA.

Additional Analyses

Response consistency. As described earlier, five of the 45 pairings were randomly selected to be repeated verbatim at a point removed from the original occurrence in the booklet. A t-test for related groups between the original pair and the verbatim repeat of it (five such pairs and repeats) indicated whether Ss responded differently to a pairing on different occasions (regardless of the direction of changed responses).

Awareness of qualifier variations. In four cases, a pairing was repeated (the same topic and same qualifier conditions paired) but with a "bad" argument substituted in the seemingly stronger qualifier condition (detractor item). If S was reading carefully and not just noting the qualifiers, his preference should have changed away from the bad argument in the second pair. A chi-squared analysis for differences as expected between the first pair and the detractor item was used to investigate this tendency. In addition, Ss' open-ended comments on how they responded to the pairs were examined by content analysis for evidence of qualifier awareness.

Other variables. The scale responses to the 36 pairs of qualifier words (included at the end of the booklet) were analyzed by the same 3 x 3 x 3 ANOVA design as in Analysis one and obtained differences were examined in relation to the differences when the words were included in arguments. Additional

measures on the Ss--intelligence, reading ability, sex, grade, age, class period, and response time needed were obtained and compared to the condition scores to determine if these organismic and procedural factors may be associated with S's responses to qualifiers. Pearson r intercorrelations were calculated on this data using the DSTAT1 Correlation Analysis Program on the CDC 1604 Computer at the University of Wisconsin.

CHAPTER III

RESULTS

The hypothesized effects of the study were tested via the statistical procedure of Analysis One. These results were also used in answering Research Questions 2.1, 2.2 and 3.1. To answer Question 1.1, pertaining to the null condition, a second analysis procedure was used. This alternative analysis also enabled comparison with the results of the first analysis on the hypotheses and the other questions. Several additional analyses were also conducted, as planned in the study, to assist in the interpretation of the major results. The .01 level of significance was established for all statistical tests unless otherwise noted.

Analysis One

The analysis of variance (summarized in Table 3) revealed significant main effects on the variables of degree and form and a significant first order interaction of degree with form.

Hypothesis 1.0. The F-ratio for the main effect of qualifier degree was highly significant ($p < .001$). Comparisons among the three degree means, by Newman-Keuls q.99 statistic (Winer, 1962) revealed

TABLE 3

ANOVA Summary Table for Analysis One:
Oualifier Degree, Form, and Location

Source	df	MS	F
Between Ss:			
Location Groups	2	0.0000	0
Ss w/ Grps (error)	105	0.0000	
Within Ss:			
Degree	2	8850.7159	66.87***
Degree x Location	4	92.0448	---
D x Ss w/ Grps (error)	210	132.3508	
Form	2	330.8642	6.13**
Form x Location	4	59.4522	1 +
F x Ss w/ Grps (error)	210	53.9990	
Degree x Form	4	186.2469	3.59*
D x L x F	8	19.4344	---
D x F x Ss w/ Grps (error)	420	51.9394	

*Significant ($p < .01$)
**Significant ($p < .005$)
***Significant ($p < .001$)

TABLE 4

Mean Comparisons for Significant Degree Main Effect

Mean Order	CD	LD	PD
Means	5.65	-1.00	-4.65
Mean Differences			
CD	---	6.65[a]	10.30[b]
LD		---	3.65

[a]Significant ($p < .01$), Critical $q_2 = 4.11$

[b]Significant ($p < .01$), Critical $q_3 = 4.66$

that the certainty terms effected stronger claim acceptance than either the likelihood or possibility terms (see Table 4). However, the likelihood and possibility degree groups did not differ significantly from each other. Thus the first null hypothesis was rejected in favor of the alternative hypothesis that the degree of the qualifier attached to reasons causes a corresponding degree of acceptance of the derived claim. Although likelihood and possibility did not differ significantly, the descending order from certainty did result as hypothesized and shows up more clearly for individual qualifiers in the analysis of the form-degree interaction.

Hypothesis 2.0 and Ouestion 2.1. A significant F-ratio for the interaction of qualifier degree with qualifier form ($p < .001$) indicated that both the degree and word form of the qualifier are factors combining to determine the strength of claim acceptance. The nature of this interaction was revealed by comparison of all means according to the Newman-Keuls $q.99$ statistic (see Table 5). Among the certainty terms, the personal thought form was stronger than both of the other two forms; for likelihood terms, the personal thought form was greater than only the adverbial form. There were no differences among the three forms of the possibility degree words. Plotting this interaction visually (see Figure 1) shows clearly, in answer to Question 2.1, that as degree increased, greater claim acceptance resulted from the personal thought form than from the other forms. This evidence leads to partial acceptance of the second research hypothesis--i.e., the personal thought form interacts to raise claim acceptance for certainty

TABLE 5

Mean Comparisons for Significant
Degree-Form Interaction

Mean Order	CD/PF	CD/IF	CD/AF	LD/PF	LD/IF	LD/AF	PD/IF	PD/AF	PD/PF
Means	7.59	4.74	4.63	.33	-.52	-2.81	-3.48	-5.15	-5.33
Mean Differences CD/PF	---	2.85*	2.96*	7.26*	8.11*	10.40*	11.07*	12.74*	12.92*
CD/IF		---	.11	4.41*	5.26*	7.55*	8.22*	9.89*	10.07*
CD/AF			---	4.30*	5.15*	7.44*	8.11*	9.78*	9.96*
LD/PF				---	.85	3.14*	3.81*	5.48*	5.66*
LD/IF					---	2.29	2.96*	4.63*	4.81*
LD/AF						---	.67	2.34	2.52
PD/IF							---	1.67	1.85
PD/AF								---	.18
PD/PF									---

*Significant ($p<.01$), Critical q_r given below

Range r =	2	3	4	5	6	7	8	9
Critical q_r =	2.55	2.90	3.11	3.25	3.36	3.46	3.53	3.59

IKno ItsC Cely IBel ItsL Prly ItsP Poly ISus

(Means enclosed by the same bracket are not significantly different.)

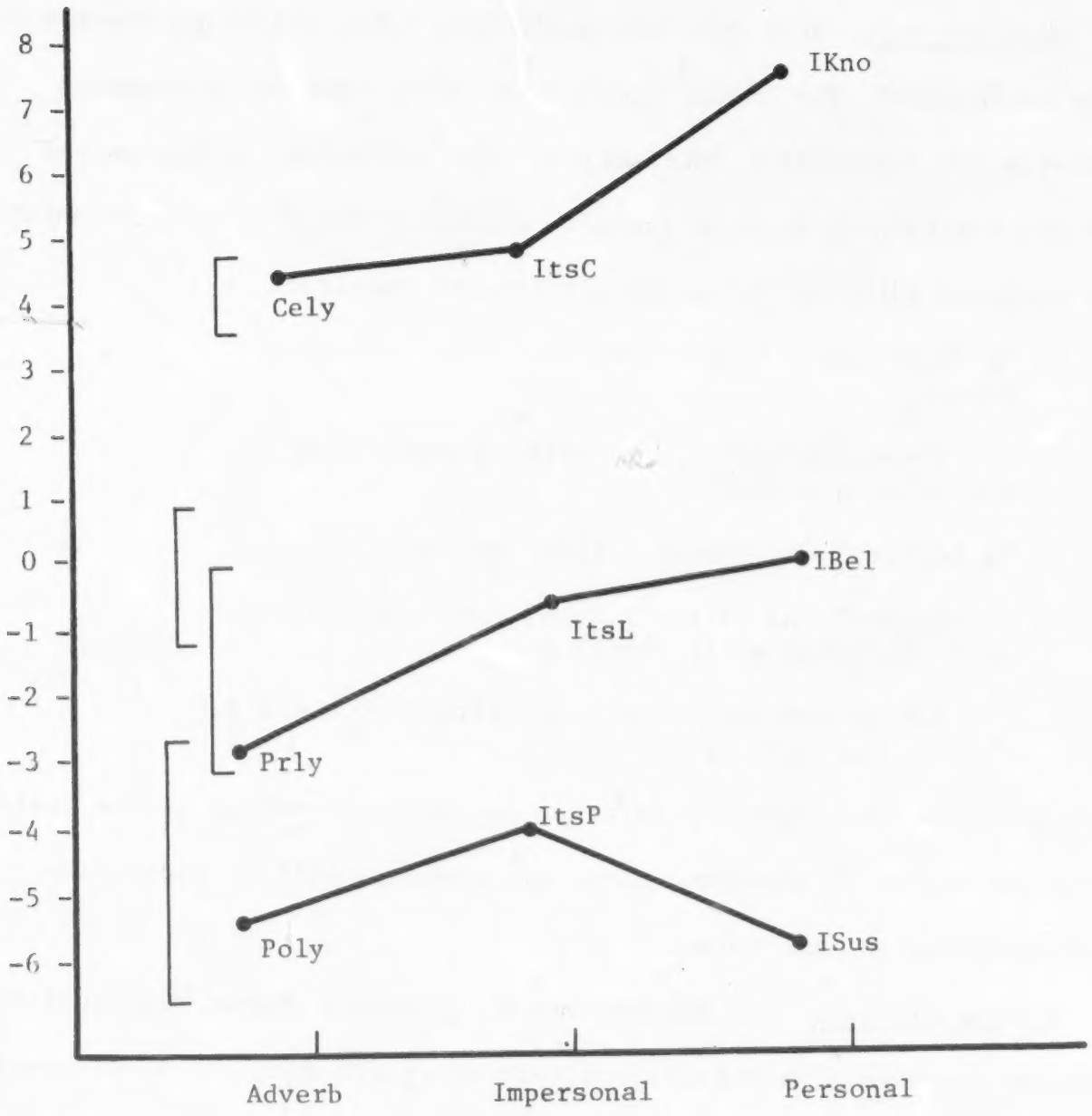

FIGURE 1

Form x Degree Interaction of Analysis One

[a]Brackets enclose means which do not differ significantly.

and likelihood but it has no significant lowering effect with possibility. The interaction may be further examined to answer Research Ouestion 2.2.

Question 2.2. What specific qualifiers cause differing degrees of claim acceptance? The answer lies in the above comparison of means following the significant interaction. The variations in degree and form are represented by nine specific qualifier words or phrases which were compared with the following significant results:

1) "I know" was stronger than the other certainty terms;

2) All three certainty terms were stronger than the other qualifiers;

3) "I believe" was stronger than "probably";

4) "I believe" and "it is likely" were both stronger than the possibility terms; and

5) "probably" and the three possibility terms did not differ from each other

Although these five points present an approximate ranking of the qualifiers by degree of strength, there are overlaps with no clear distinctions between some terms.

Hypothesis 3.0. The interaction of qualifier degree with qualifier location produced a nonsignificant F-ratio ($p < .05$ with .01 level required). The null hypothesis was not rejected. Thus, contrary to this research hypothesis, the acceptance of the claim is apparently not a product of the combination of degree with the number of reasons qualified.

Question 3.1. For a given qualifier degree, is there any difference in claim acceptance according to which reason statement is qualified? This question pertains to a more specific examination of the means in

any significant degree-location interaction found under Hypothesis 3.0; since this interaction was not significant, the answer, from this data, is simply "no".

Qualifier form effects. One unexpected result was a significant F-ratio for the main effect of qualifier word form ($p < .005$). However, the comparison of all three means (Newman-Keuls $q.99$; see Table 6) revealed no significant differences to account for the significant overall F (even the use of the less conservative level of $p=.05$ or $q.95$ yielded no significant differences). This main effect on form with no mean differences is a surprising result which may be an artifact of the two different statistical models (ANOVA and Newman-Keuls); there is insufficient evidence to interpret the form effects.

In summary, three tendencies in particular have been revealed by Analysis One--that the degree of qualification on reasons is conveyed accordingly to the claim (Hypothesis 1.0), that the stronger the degree the more the weight carried by a personal commitment (Hypothesis 2.0), and that "probably" is ambiguously associated with both likelihood and possibility words. The second analysis seeks to determine (1) what degree relationship exists between the qualifiers and the unqualified statement (Ouestion 1.1) and (2) whether the above tendencies, and others, are apparent when the null condition is considered.

Analysis Two

Since the location variable did not prove a significant factor in Analysis One, all 108 Ss were treated as a group in Analysis Two by summing across location groups. This analysis of variance

TABLE 6

Mean Comparisons for Significant Form Main Effect

Mean Order	PF	IF	AF
Means	.86	.24	-1.11
Mean Differences			
PF	---	.62	1.97
IF		---	1.35

Critical q_2 = 2.63, Critical q_3 = 2.98

procedure (outlined by Scheffé, 1952) is specifically designed for paired comparisons data and treats the 10 conditions paired (qualifiers and null) as the main effect with one interaction effect of the conditions with the individual pairings (deviations from subtractivity, see Table 7). The F-ratio for this interaction was significant ($p < .01$), but this is neither surprising nor problematic. By the design of the study, the score for a qualifier would quite naturally vary according to the qualifier with which it was paired. This result presents no problem since it only determines which (of two possible) calculations represents an accurate estimate of the population mean for each condition; that estimate was the one used in the subsequent analysis. The main effect F-ratio for the nine qualifiers plus the null was significant ($p < .001$), as expected from the somewhat analogous interaction of degree with form in Analysis One.

Question 1.1. Comparisons among the qualifiers and the null or unqualified condition means were examined via Scheffé's "yardstick" $\bar{Y}_{.01}$ test of significant differences. An unqualified statement effected greater claim acceptance than any of the other qualifiers with exception of "I know," which did not differ significantly from the null. This result is somewhat surprising in light of prior research which suggests that the null might fall between the certainty and likelihood degrees, and the finding will be examined further in Chapter Four.

Comparison to Analysis One. Including the null condition data in this second analysis led to some results slightly different from the

TABLE 7

Schaeffé Analysis of Variance and Mean Comparisons Among the Nine Qualifiers and the Null Condition

Source	df	MS	F
Qualifier Conditions	9	358.80	69.20*
Deviations from Subtractivity	36	18.34	3.53*
Means	45		
Error	4815	5.19	
Total	4860		

*Significant ($p < .01$)

Ordered Conditions and Means ($\hat{q}_i$)

Null	CD/PF	CD/IF	CD/AF	LD/PF	LD/IF	LD/AF	PD/	PD/PF	PD/AF
.906	.727	.476	.421	-.115	-.193	-.439	-.456	-.667	-.687
Null	IKno	ItsC	Cely	IBel	ItsL	Prly	ItsP	ISus	Poly

(Menas enclosed by the same bracket are not significantly different by Scheffé Y_e test; for $p < .01$, a difference $\geq .357$ was required between any two means.)

interaction of degree and form in Analysis One. In contrast to the first analysis, "I know" was not significantly stronger than the other certainty terms and there were no differences among likelihood terms. The tendency for personal commitment to increase with an increase in degree remains equally visible (compare Figures 1 and 2) but that trend appeared weaker since there were fewer significant differences involving the personal form in Analysis Two. "Probably" remained ambiguous in associating with both likelihood and possibility (as in the first analysis), but "it is possible" also was ambiguous in Analysis Two since it did not differ from any of the likelihood or possibility terms. Both "probably" and "it is possible" constituted a transitional group between the other likelihood and possibility qualifiers. Otherwise, the ordering of the qualifiers was the same for both analyses (except for a nonsignificant reversal of "I suspect" and "possibly"). In short, compared to Analysis One, the same tendencies were evident but fewer distinctions between terms resulted when pairing with the null were considered.

Additional Analyses

Four a priori statistical procedures--response consistency, awareness of qualifiers, qualifier Words-only, and intercorrelations analysis--were conducted to determine reliability and reveal other information aiding the interpretation of the major analyses. These measures were calculated for each of the three S groups (location variable) in order to note any group differences affecting the results (also a check on the random assignment of Ss to the groups).

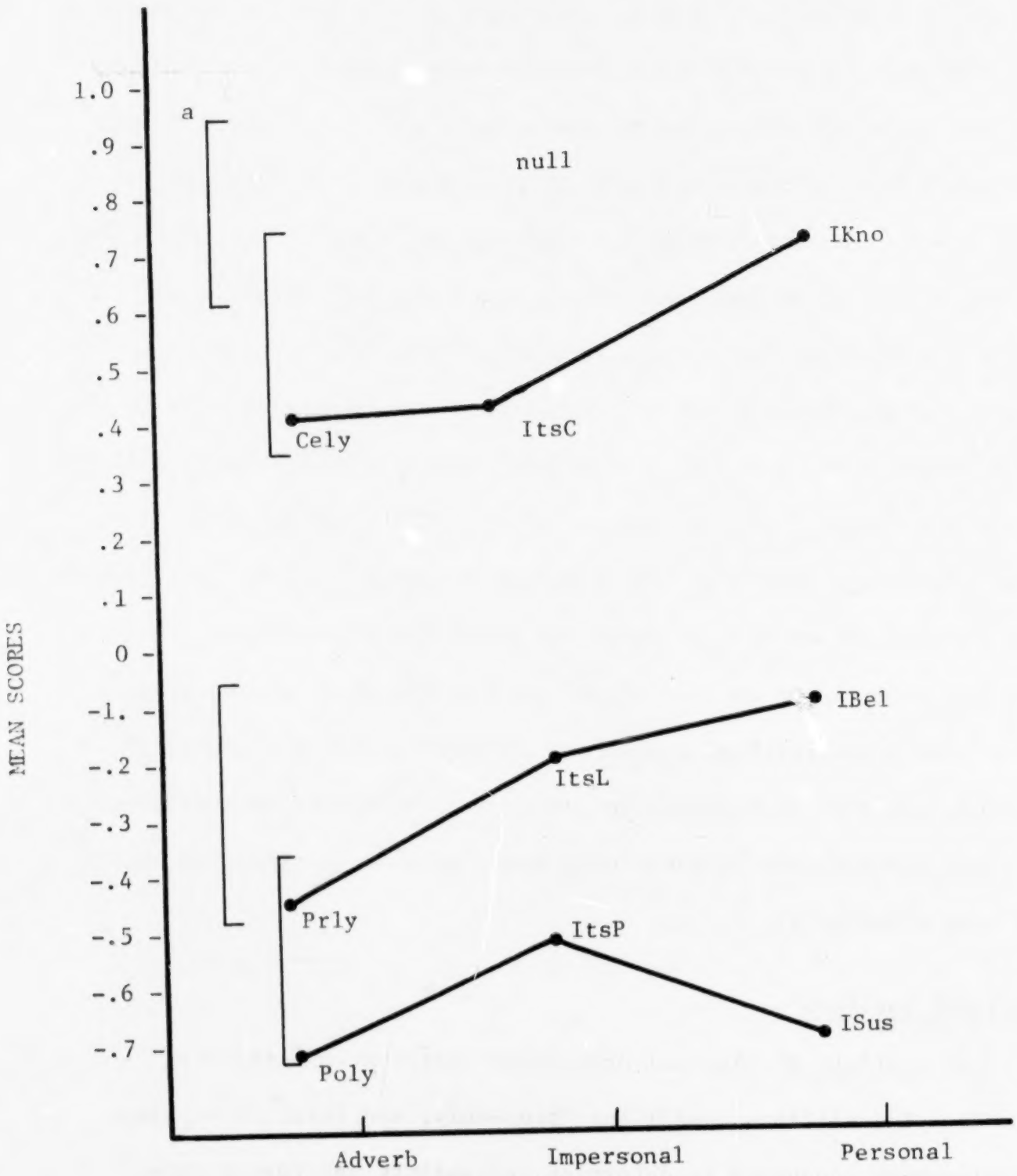

FIGURE 2

Scheffe´ ANOVA Means of Analysis Two

[a]Brackets enclose means which do not differ significantly.

Response consistency. This analysis represented a measure of retest reliability on Ss as a group. If Ss were consistent and dependable in their responses, they could be expected to mark the same scale blank for a pairing when it is repeated later in the booklet as when first presented (except for random or chance variations). Five such repeated pairings for each of three location groups produced 15 such original vs. repeat comparisons with $p \leq .05$ established as the level of significant difference. The prediction under consistency of Ss' responses was no significant differences for the 15 t-tests; only one of the 15 t-tests was significant (see Table 8). In addition, in no cases did the error variance of the responses exceed .2 of a scale point and examination of the data by individual Ss revealed two-thirds or more of the Ss in each group to be very consistent in their responses over the five repeat pairs (see Appendix B).

It is recognized that the use of multiple t-tests on the same data (rather than one overall F-test) has the effect of yielding significant t's which may be only chance differences. In this case, however, the procedure would tend to produce results contrary to the expectation of no significant differences.

Awareness of qualifiers. As the respondents became aware of the variations in qualifiers in the arguments, they might tend to simply note the qualifier terms used and not bother to read the paired arguments completely (especially since these arguments were repeated throughout). In such a case their responses might be, in essence, to the terms as if in isolation rather than to their function in the

TABLE 8

Retest Reliability:
Mean Differences Between Original and Verbatim
Repeat Argument Pair Items

L-Group		Original and Repeat Pairing 1	2	3	4	5
DL	$O\bar{X}$	4.03	4.71	3.82	5.52	3.27
	$R\bar{X}$	4.28	5.02	3.45	5.61	3.55
	$\bar{D}$	.25	.31	.37	.09	.28
	ΣD^2	67	71	149	201	58
	N	36	35	35	34	36
WL	$O\bar{X}$	3.89	5.14	4.08	5.33	3.19
	$R\bar{X}$	3.92	5.03	3.25	5.92	2.83
	$\bar{D}$	.03	.11	.83*	.59	.36
	ΣD^2	87	90	170	173	53
	N	36	35	36	36	36
BL	$O\bar{X}$	3.86	4.97	3.39	5.39	2.92
	$R\bar{X}$	3.97	4.77	3.56	5.06	3.17
	$\bar{D}$	.11	.20	.17	.33	.25
	ΣD^2	188	81	196	84	113
	N	36	35	36	36	36
O Item #		(33)	(41)	(19)	(21)	(37)
R Item #		(48)	(49)	(58)	(59)	(60)

*Difference significant ($p < .05$), $t = 2.45$

argument. One check on S consideration of the argument content was comparison of their responses to an original item and the detractor item modification of it (technique described in Chapter Two). If Ss were reading carefully and considering all aspects of the paired arguments, there would be a significant change in preference away from the "bad" argument in the detractor item response. A chi-squared analysis for each of 12 cases (four detractor items and three location groups) revealed seven significant χ^2 measures ($p < .01$, see Table 9). The difference (change) was in the direction expected in all seven significant cases, and these were divided somewhat evenly across the three S groups (2-3 each). More specifically, over half of the Ss in each group changed as expected where there was a significant χ^2. It should be noted that a chi-squared analysis, as a nonparametric statistic, is less sensitive to real differences than is a parametric test; thus, in this case, the analysis gives s conservative estimate of the differences as expected.

Another measure of S awareness of the qualifiers may be derived from content analysis of their responses to the questions in the booklet on factors influencing their claim choices (page following argument pairs). Only 48 of the 111 Ss (or 13 to 19 per location group) clearly identified the qualifiers as affecting their decision, usually by quoting some of the terms. But another 28 Ss commented on the positiveness, "whether definite", the "preceding words," or something about the wording in the statements, all of which were ambiguous but possibly suggestive of qualifier terms as factors. Therefore, as many

TABLE 9

Detractor Analysis: Change (Neg.) of Preference Away from Argument When Weakened in Repeated Item

L-Group	Preference Change	Expected Frequency	Actual Frequence, Each Repeat 1	2	3	4
DL	Neg.	12	16	19	16	20
	0	12	13	7	11	8
	Pos.	12	8	10	9	6
	Chi^2	36	2.66	6.49*	2.16	9.66*
WL	Neg.	12	14	19	19	19
	0	12	11	6	11	11
	Pos.	12	11	11	6	6
	Chi^2	36	.49	7.16*	7.16*	7.16*
BL	Neg.	12	16	20	20	13
	0	12	7	9	9	10
	Pos.	12	11	7	6	13
	Chi^2	36	3.49	8.16*	9.08*	.49
	Original Item #		(1)	(4)	(18)	(26)
	Detractor Item #		(16)	(22)	(23)	(38)

*Chi Squared significant ($p < .05$)

as one half to two thirds of the Ss (distributed somewhat equally across the three location groups) apparently were aware of qualifiers as a factor to be considered in their responses. At the same time, 48 Ss (22 in DL group, 12 in WL, 14 in BL) clearly identified as factors their knowledge of or attitude twoard topic, or the truth or logic of the agrument. An additional 10 Ss made comments which were ambiguous but possibly indicative of topic, truth or logic factors. Some of the same respondents indicated qualifiers as well as these other factors influenced their decisions. Thus many Ss considered the qualifier used in making their choice, but many also considered the topic, truth, or logic factors of argument content, such as the assertions modified in the detractor items.

Words-only analysis. Responses to all possible pairings of the nine qualifier words or phrases in isolation (not attached to reasons in arguments) were analyzed for comparison to the results when paired in an argument context. The same 3 x 3 x 3 ANOVA design was used as in Analysis One. Here also, significant main effects for degree ($p < .001$) and form ($p < .005$) as well as a significant degree-form interaction ($p < .001$) resulted (see Tables 10 and 11); but some mean comparisons revealed different findings from the argument context results. All three degrees were significantly different from each other--as a group and by the individual qualifiers (Newman-Keuls $q.99$; see Tables 12 and 13). For qualifier words-only, the likelihood terms were all stronger than the possibility terms; this was not true for "probably" in argument contexts. There were two changes, from the argument to Words-

only Analysis, in the order and differences of the qualifiers--"it is certain" and "I know" were both greater than "certainly," and "I believe" was greater than both "it is likely" and "probably." In other words, "it is certain" was perceived as weaker but "it is likely" was perceived as stronger when in arguments than when in isolation (see Figure 3). Except for this change in the impersonal pronoun form words, the same interaction trend is evident--personal thought form increasing with increase in degree.

The location variable was included in this analysis as in Analysis One, but since reason statements were not involved in the words-only part of the experiment, this is not a meaningful variable here; and, predictably, there were no significant differences involving the location variable.

Organismic and procedural variables. Selected organismic variables (intelligence, reading ability, sex, grade, and age) and procedural variables (class period, response time, and qualifier location group) were analyzed for their intercorrelation with the qualifier conditions for arguments and words-only contexts (not including the null). "It is certain" had significant ($p < .01$) positive correlations with both intelligence and reading scores for both contexts; there were low correlations with intelligence (r's of .435 and .481). "Possibly," in arguments and words-only, was correlated negatively ($p < .01$) with intelligence and reading socres, but this inverse relationship was generally low in strength (r's range from -.290 to -.402). Thus Ss higher in intelligence and reading ability attached higher probability

TABLE 10

ANOVA Summary Table for Words-only Analysis

Source	df	MS	F
Between Ss:			
Location Groups	2	0.0000	---
Ss w/ Grps (error)	102	0.0000	
Within Ss:			
Degree	2	55832.6885	439.55***
Degree x Location	4	26.7415	---
D x Ss w/ Grps (error)	204	127.0170	
Form	2	760.8286	7.19**
Form x Location	4	45.4238	---
F x Ss w/ Grps (error)	204	105.6960	
Degree x Form	4	498.9651	10.93***
D x L x F	8	7.6841	---
D x F x Ss w/ Grps (error)	408	45.6438	

**Significant ($p < .005$)
***Significant ($p < .001$)

TABLE 11

Words-only Analysis: Mean Comparisons for Significant Form Main Effect

Mean Order	PF	IF	AF
Means	1.41	.26	-1.67

Mean	PF-IF	PF-AF	IF-AF
Differences	1.15	3.08	1.93

Critical q_2 = 3.73, Critical q_3 = 4.24

TABLE 12

Words-only Analysis: Mean Comparisons for Significant Degree Main Effect

Mean Order	CD	LD	PD
Means	14.96	-4.41	-10.55

Mean	CD/LD	CD/PD	LD/PD
Differences	19.37[a]	25.51[b]	6.15[a]

[a] Significant ($p < .01$), Critical $q_2 = 4.07$

[b] Significant ($p < .01$), Critical $q_3 = 4.62$

TABLE 13

Words-only Analysis: Mean Comparisons for
Significant Degree--Form Interaction

Mean Order	CD/IF	CD/PF	CD/AF	LD/PF	LD/AF	LD/IF	PF/IF	PD/PD	PD/AF
Means	17.41	16.23	11.24	-1.84	-4.91	-6.48		-10.16[a]	-11.32
Mean Differences CD/IF	----	1.18	6.17*	19.25*	22.32*	23.89*		27.57*	28.73*
CD/PF		---	4.99*	18.07*	21.14*	22.71*		26.39*	27.55*
CD/AF			---	13.08*	16.15*	17.72*		21.40*	22.56*
LD/PF				---	3.07*	4.64*		8.32*	9.48*
LD/AF					---	1.57		5.25*	6.41*
LD/IF						---		3.68*	4.84*
PD/IF							---	----	
PD/PF								----	1.16
PD/AF									----

*Significant ($p < .01$), Critical q_r given below
[a]PD/IF and PD/PF were tied, each with mean = -10.16

Range r =	2	3	4	5	6	7	8
Critical q_r =	2.40	2.71	2.90	3.04	3.14	3.22	3.29

tied

ItsC IKno Cely IBel Prly ItsL ItsP ISus Poly

(Means enclosed by the same bracket are not significantly different)

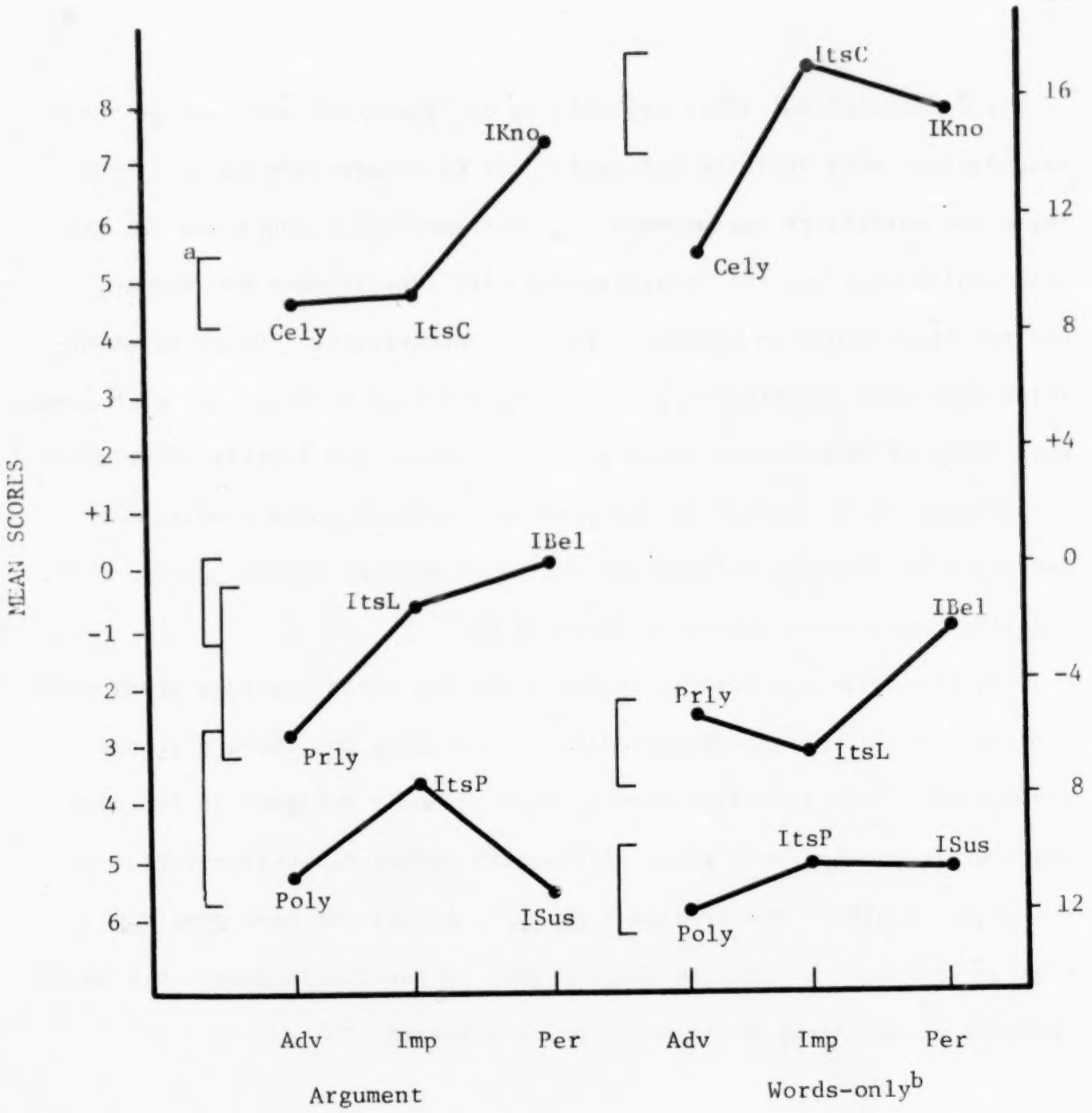

FIGURE 3

Form x Degree Interaction for Words-only Context Compared to Argument Context

[a]Brackets enclose means which do not differ significantly.

[b]Note that the Words-only mean scores are on a scale twice that for Argument mean scores.

to "it's certain" but lower probability to "possibly" and many of these associations were definite but small. It is interesting to note that these two qualifiers approximate the "extremes" of a continuum for the nine qualifiers; but the relationships with intelligence and reading are not high enough to warrant further interpretation. Other relationships that were revealed--e.g., intelligence with reading, age with grade, qualifiers of same degree group with each other, and inverse association of certainty with likelihood and possibility--were quite predictable and yield no specific information worthy of further comment (see complete correlation matrix in Appendix C).

Neither this correlation analysis nor any other analysis previously discussed found any significant differences among the three S groups (location). This indicated that Ss were randomly assigned as intended and that there were no S group differences affecting interpretation of the major results. The several a priori analyses and some post hoc examinations will be used in Chapter Four to further interpret the major findings of the study in light of prior research.

CHAPTER IV

SUMMARY, CONCLUSIONS AND IMPLICATIONS

Summary

Qualifiers are single words or word strings which are frequently used in statements to modify the strength of belief in the attached assertion. Language theorists have viewed such words as functioning to weaken the author's commitment to an assertion (e.g., probably, it's likely), or to strengthen commitment to an assertion (e.g., I know, certainly). Since the imprecision of qualifiers, as probability estimates, is a potential source of misunderstanding and misrepresentation in expressions, more information is needed on receiver responses to these words.

The general purpose of this study was to examine qualified and unqualified argumentative reasons for their relative effects upon reader assessment of the strength of the claim (conclusion). Nine qualifier terms were studied which represent three degrees of qualification (certainty, likelihood, and possibility) and three forms of wording (adverbial, impersonal

pronoun-adjective, and personal thought assertion); the words selected were "certainly, it is certain, I know, probably, it is likely, I believe, possibly, it is possible, and I suspect." The qualifiers were placed in the arguments according to three levels of the third variable, location (on the data, on the warrant, or on both). The dependent variable was the degree of relative strength with which readers accepted the claim derived from data and warrant. Hypotheses drawn from the previous research predicted differences in claim acceptance according to (1) a descending order of strength across qualifier degree from certainty to possibility, (2) an interaction of degree with form, raising or lowering the impact of the degree for certain forms, and (3) an interaction of degree with location, raising or lowering impact of the degree when both reasons are qualified. Related questions focused on (a) the comparison of qualified and unqualified reasons, (b) the specific nature of differences among the nine qualifiers, and (c) the comparison of data and warrant locations for interaction with degree.

The relative strength of acceptance of the claim was obtained by pairing each of the nine qualifiers, on reason statements of contradictory arguments, with every other qualifier and the unqualified (null condition) statements (10 x 9/2 = 45 pairs). Ss determined the stronger of the two claims in each case by marking on an eight-point scale between the paired qualifier conditions. The argument content in the pairs was

controlled by matching Contradictory assertions on the same topic and systematically varying the topics from pair to pair. The sample, 111 students in eleventh-grade social studies classes, was divided into three groups by qualifier location in arguments (data, warrant, or both) through random assignment of Ss. A 3 x 3 x 3 ANOVA design was used for the main statistical analysis and a Scheffé ANOVA for paired comparisons was used for a second analysis with the null condition.

The major findings were as follows. (1) Certainty degree terms caused stronger claim acceptance than the other terms but a difference between likelihood and possibility occurred for only some of the terms; "probably," in particular, clustered with both likely and possible terms suggesting that it has an ambiguous meaning for these students. (2) As degree increased, greater claim acceptance resulted for the personal thought form over the other wording forms. (3) An unqualified statement caused claim acceptance equal to or greater than the use of certainty terms. (4) There was no difference in qualifier degree effects according to variations in location in argument. (5) In general, comparison of qualifiers paired in arguments and by themselves (additional analysis for Words-only) suggests that the words take on some relative meanings in arguments differing from their meanings in isolation.

One additional analysis (Response Consistency) revealed

that although the Ss in each of the three groups were, on the whole, consistent in their responses to the qualifier pairing, individual Ss displayed cases of marked inconsistency. This finding raised the question of whether or not S inconsistency was at least in part responsible for some of the peculiar differences between conditions. Thus it seemed advisable to conduct the following post hoc analyses (Internal Consistency and Scheffe´ Re-run) before attempting further interpretation of the results.

Internal Consistency Analysis

The response consistency analysis reported in Chapter Three (using five repeated pairings) provided a measure of retest reliability--i.e., the consistency of an S's response to the same pair over time. However, this measure was calculated on each of the qualifier location groups as a whole, not by individual Ss. In order to determine if individual respondents were inconsistent (unreliable) the following procedure was used.

First, the data on the five original and repeated pairings (see Appendix B)were examined for each S to determine those who were relatively consistent in their retest responses. Roughly two-thirds of the sample were judged consistent by having no more than two sign changes and only slight variations in scores from the five original pairs to the five repeats. Ss meeting this first criterion were then examined for their internal

consistency--i.e., how consistent was each person in his preferences across all 45 pairings? The Coefficient of Consistence K is a nonparametric statistic used to show the degree of consistency indicated by each S in the ranking of all ten conditions according to preferences in all possible pairings (Ferguson, 1959, pp. 189-93). In essence, K indicates how many triadic combinations of the ten conditions show preference consistency; a triad is consistent if A is chosen over B, B over C, and A over C. So the K was computed for each S judged reliable on the prior retest analysis. S was considered to be internally consistent if $K \geq .60$, which is significant at the .01 level.

This analysis revealed that 38 of the total sample of 111 Ss were consistent by both measures. The Ss divided rather evenly across the three location groups--14 in DL, 12 in WL, and 12 in BL. These 38 people will be hereafter referred to as the "consistent" Ss and will constitute the sample for the next post hoc analysis.

Scheffe´ANOVA for Consistent Ss

The Scheffé Analysis of Variance was re-run on just the 38 consistent Ss following the same procedure as in Analysis Two of Chapter Three. The deviations from subtractivity were not significant ($p > .01$) but the main effect of the 10 qualifier conditions was significant ($p < .01$; see Table 14). Mean

TABLE 14

Re-run of Scheffé Analysis of Variance
and Mean Comparisons for Consistent Ss Only

Source	df	MS	F
Qualifier Conditions	9	497.968	173.085*
Deviations from Subtractivity	36	4.528	1.573
Means	45		
Error	1665	2.877	
Total	1710		

*Significant ($p < .01$)

Ordered Conditions and Means ($\bar{x}_j$)

Null	CD/IF	CD/PF	CD/AF	LD/IF	LD/PF	LD/AF	PD/IF	PD/PF	PD/AF
1.536	1.386	1.268	.855	-.426	-.536	-.699	-.878	-1.1[illegible]	-1.470
Null	ItsC	IKno	Cely	ItsL	IBel	Prly	ItsP	ISus	Poly

(Means enclosed by the same bracket are nonsignificantly different by Scheffé Y_ϵ test; for $p < .01$, a difference $\geq .448$ was required between any two means.)

comparisons via Scheffé's Yardstick $Y_{.01}$ revealed the following qualifier condition differences as compared to Analysis Two with the complete sample:

1) The null was greater than all other qualifiers except "it's certain" and "I know" (original Scheffé: null also greater than "it's certain").
2) "It's certain" was greater than the other certainty words, but all three certainty words were greater than likelihood and probability words (original: no differences among certainty terms).
3) There is no clear interaction pattern; the personal thought form pattern of the original Scheffé ANOVA is not evident in this Re-run (see Figure 4).
4) Instead, two other patterns resulted: (a) the adverbial form was the weakest form in all three degrees (although this same tendency existed in the original Scheffé but less strikingly), and (b) the impersonal form was the strongest form in each degree group. The impersonal terms differ from more terms below them than do the other terms--ITsC > Cely, ItsL > ItsP, ItsP > Poly. These results indicate the adverbial and impersonal forms are the extremes of both certainty and possibility degrees.
5) "Probably" was ambiguously associated with both likelihood and possibility words (original: same and more complete with "possibly" included in the association

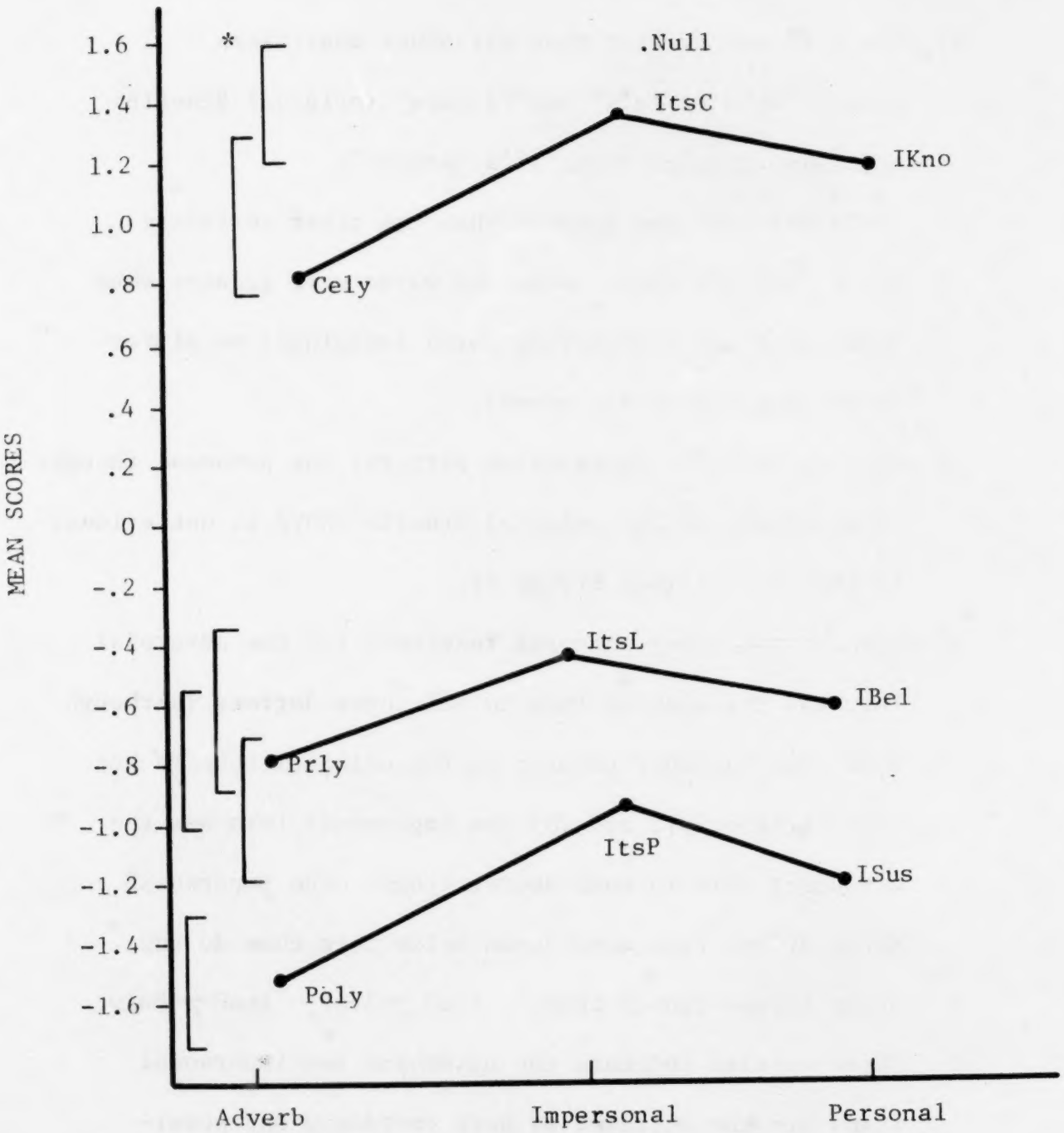

FIGURE 4

Scheffé ANOVA Means for Re-run (consistent Ss)

*Brackets enclose meqns which do not differ significantly.

with "probably").

6) "It's possible" was ambiguously associated with both likelihood and possibility (original: same and more complete with "it's likely" also in cluster with "it's possible").

7) Generally there were a couple of changes in the rank order and more distinctions among qualifiers than in the original Scheffé analysis.

Even with some slight changes in mean comparisons, this post hoc analysis with consistent Ss further validated particular major trends found in the earlier analyses. First, the unqualified condition imparts to the claim at least as much strength as certainty words and more than one of them ("certainly"). Second, all three certainty words impart greater strength of acceptance than do the other two degrees. Third, there is some blurring of distinctions between likelihood and possibility degrees, at least for the word "probably" and perhaps for "it is possible" as well.

On the other hand, the Scheffé Re-run revealed a very different picture from the degree-form interaction found in previous analyses--namely, no interaction but some clear form differences. This seems to be the most noticeable change in results with the exclusion of inconsistent Ss and perhaps the hardest to interpret. For these reasons, the word form patterns will be discussed first followed by interpretation of the major findings across all data analyses.

Word Form Patterns

Differences among degree words within each of two form groups (personal thought and impersonal pronoun-adjective) were revealed in Analysis One; in other words, "know", "believe" and "suspect" are three significantly different degrees as are "certain", "likely" and "possible". Reflecting the form-degree interaction of Analysis One, the largest spread of differences is for the personal thought form; and in Analysis Two with the null condition included, the within-form distinction of all three degrees occurs only for the personal thought assertions. In the Scheffé Re-run on consistent Ss significant differences between all three degrees occur within each of the three form groups and the spread of differences is about equal. So the interaction involving the personal thought form is not evident for consistent Ss. Instead this pattern suggests the presence of a word form main effect which is more pronounced than in the previous analyses. Pooling the Scheffé means ($\bar{x}_j$) yields estimated form variable means of IF= .082, PF=-.412, and AF=-1.314; the difference seems especially clear between the impersonal (IF) and adverbial (AF) forms and even apparent between personal (PF) and adverbial.

In other words, the impersonal pronoun-adjective and personal thought forms are the strongest forms for all three degrees, with the adverbial clearly at the bottom. What ac-

counts for this form difference and why does it occur for consistent Ss only? Perhaps it is related to the similarity of the two stronger forms; they both have several words and form an introductory clause (with or without "that") in contrast to the single word adverb form. This difference in syntactic structure may make the clause forms more noticeable and thus more emphatic regardless of the degree expressed. Just why this difference shows up only in the analysis with consistent Ss is not clear, and particularly because of the low sample size (38) for this post hoc analysis, further investigation is necessary.

A somewhat different factor seems to be operating to account for the interaction pattern which occurred in Analyses One and Two with all Ss. The results provide at least a tentative resolution of the conflicting views of Urmson (1956) and Austin (1965), on the relative impact of individual vs. general terms expressing probability (see Chapter One). Contrary to Urmson's analysis, "I believe" seems to convey greater probability than "probably". Whereas, "I know" conveys greater certainty than either of the other two qualifiers using the word "certain", confirming Austin. Thus Austin's view seems to be the sounder one--that personal commitment (e.g., I know, I believe) is more effective than implied universal acceptance (e.g., probably, certainly, it is certain) for increasing the

probability of a claim, and this effect is heightened with an increase in the qualifier degree.

Interpretations of the two major patterns in qualifier form effects may be summed up in two implications. First, most high school students may be more impressed by indications of a claimant's personal commitment than by universality, especially as higher degrees of probability are expressed. Second, students who are very consistent in their responses, however, may attach greater probability to emphatic clause structures (both personal and general expressions) for all degrees of qualification. Both of these possibilities need to be studied further, however, because of the apparent conflict in certain results of this study.

Unqualified Statements Reflect Certainty

Language philosophers reviewed earlier (Austin, 1965; Hall, 1958) suggest that terms expressing certainty function to strengthen the degree of commitment implied by an unqualified statement--i.e., "certainly" conveys a greater degree of belief than the null condition for the same statement. Some theorists (Toulmin, 1964; Urmson, 1956) predict that other terms such as "probably" or "perhaps" would operate to weaken the commitment implied by the unqualified statement. Translated into the design of the current study, their analytical findings would predict that the claims derived from unqualified statements are viewed as (1) more acceptable than those derived

from statements marked as likely or possible but (2) less acceptable than claims from statements marked as certain. Initially, this seems to be a very sensible and obvious prediction. However, the results of this study are in part contrary to this prediction. Although the null condition did prove to be significantly greater than both the likelihood and possibility conditions, it was not significantly different from the "I know" or "it is certain" conditions and even proved to be significantly stronger in degree than the condition using "certainly". It should be noted that Toulmin (1964) and Urmson (1956) seem to be saying that "I know" simply implies the truth of the statement, without "adding to" our commitment as Austin believes it does. But, looking at the data from Analysis Two by individuals, we find that nearly 60% of the students viewed the null as stronger when paired with "I know," even though the means for those conditions were not significantly different. Thus to the minds of high school students an unqualified, simple, "bare" statement seems to convey acceptance to a claim as much as, or even more than, a statement asserted to be certain. The interpretations of ordinary language philosophers on this point of comparison do not fully characterize the operation of the adolescent's mind in responding to arguments. A question for further study is to see whether this philosophical analysis characterizes how other populations respond.

What is the explanation for the strength of the unqualified statement, especially since some of the results are contrary to expectations from prior studies? One possibility is that the unqualified statement suggests a factual statement, whereas the presence of a qualifier (other than "know" or "certain") signals an opinion statement. The fact that two qualifiers were similar in strength to the null might be interpreted in this way: "I know" suggests personal knowledge of a fact and "it is certain" implies a universally accepted or fully established fact, but the other qualifiers do not carry this implication. The one puzzling exception is the word "certainly" (which will be further examined shortly). At any rate, from the high school experiences of this researcher, many teachers teach students to distinguish fact from opinion with a value placed on fact as more acceptable than opinion. The fact-opinion distinction sometimes proves unclear for recognizing the difference in ordinary language usage,[1] and it may be that the difficulty in distinguishing prompts high school students to rely on verbal cue words like the qualifiers to resolve this problem. Such

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[1] The ability to distinguish fact from opinion has long been valued in critical thinking texts and tests; but this distinction proves very difficult in numerous cases of everyday reasoning--eg., "The U.S. is reducing arms shipments to Israel" may be taken as either a statement of fact or opinion depending on source, other information, and other extralinguistic factors. The linguistic context is insufficient to resolve this but it may be all we have to operate from at the moment and thus the fact-opinion distinction is of little help in judging this statement.

a reliance could be misleading and suggests that perhaps there is a need for the development of other critical abilities to apply in such situations.

The slight difference in results for the two Scheffé analyses also raises some interesting questions for further examination. The re-run Scheffé analysis with only the consistent Ss found the null to be stronger than only "certainly" (and the likelihood and possibility terms), in contrast to the null exceeding both "certainly" and "it is certain" in the analysis with all Ss. If the majority of the Ss were inconsistent because of confusion on how to judge arguments, then perhaps students who are less sure of their interpretations of arguments (or who may have lower critical ability) are more suspicious of the assertion "it is certain" than are the other students. Supporting this is the finding of John Cohen (1957, p. 134) that the expression "is certain to" about rain or elections signified only a 70% chance to "the average person" (population unspecified). In the current study, the mean of the full sample is probably more representative of the "average" high school student than is the Re-run mean. As for the consistent respondents, perhaps they are simply more discriminating in making more distinctions among certainty terms (as well as the other qualifiers); or maybe they are more cognizant of the emphatic quality of the personal and impersonal forms

as discussed in the previous section. The expressions "I know" and "it is certain" seem to have an emphatic quality of definiteness which may account for them being the strongest qualifiers and roughly equal in strength to the null. "Certainly," though similar in meaning, does not have this emphatic form or quality. All of these speculations need to be explored further--possibly in a design to compare consistent and inconsistent responders or those untrained with those trained in critical thinking.

Even so, the prior and current results raise questions about the effectiveness of some types of verbal emphasis--especially "certainly" but also "I know" and "it is certain" since even they did not create a compelling strength of belief to exceed the "bare" unqualified statement. The use of these words may thus be extraneous and, to many high school students (the inconsistent ones, at least), may even produce greater suspicion toward the argument. Perhaps adolescents feel that the use of almost any certainty degree words by a speaker or writer implies a lack of confidence or certainty moving the author to cover for it by verbally asserting the certainty. It was just such a misuse of qualifiers that concerned Cohen and Hansel (1956); but it appears that high school students are not being fooled by these "emphatic" words although they may be mislead in other ways by qualifiers (e.g., in fact-opinion decisions).

The Ambiguity of Probably

The word "probably" attached to a reason statement seems to present an ambiguous meaning to high school students; it suggests either likelihood or possibility or some degree in between the two. The word standing alone appears to be less ambiguous since it groups with likelihood and is clearly distinguished from possibility terms (see Table 12, Chapter Three). In both Scheffé analyses, "It is possible" displayed this same kind of ambiguity with likelihood and possibility, and examination of the individual S responses to both qualifiers revealed no greater variation in the distribution of responses than for any other qualifiers (even less variability than some in fact). Instead, it was found that in the one item pairing "probably" and "it is possible" the latter was preferred over the former by most of the students (67% of both the consistent and inconsistent Ss); the reverse was true in the words-only analysis (only 20% preferred "it's possible"). Otherwise, "probably" was clearly stronger than the other two possibility terms and "it is possible" was clearly weaker than other likelihood terms to most of the students. So it may be that this one pairing of the two qualifiers, resulting in a preference contrary to what might be expected from prior research, accounts for the apparent ambiguity of both terms. Yet re-calculating the means for the two qualifiers (using the original Scheffé analysis), by dropping that one pairing, reveals a significant

difference between "it's possible" and both "it's likely" and "I believe", but "probably" still clusters ambiguously with likelihood and possibility.

Re-calculated

IBel	ItsL	ItsP	Prly	ISus	Poly
-.115	-.193	-.415	-.580	-.667	-.687

(Underlined means are not significantly different by $\underline{Y}_{.01}$ test, difference $\geq$ .357 required.)

In a "hypothetical" re-calculation, with the preference score for the Prly-ItsP pair reversed (i.e., same score, changed sign; Prly> ItsP) the two means still do not distinguish from each other although there is no other overlapping of likelihood and possibility terms (hypothetical means: Prly=.308 , ItsP=-.587).

Just why the high school students considered "it is possible" stronger than "probably" is not clear. Perhaps the topic of the arguments may have been the key factor here since "probably" exceeded "it's possible" in the Words-only Analysis. The subject matter of topic was the same for both arguments in a pairing; but since the arguments were contradictory, was one claim preferred over its contradictory? A charting of $\underline{S}$ choices of claim y over claim x for each topic would yield evidence on this possibility (see Table 15). This Prly-ItsP pairing was

TABLE 15

Number of Ss Preferring Argument y Per Topic and Order Effects

Topics	A	B	C	D	E	F	G	H	I
	8b	7b	1b	4b	3b	19b	5b	24b	2b
Item # and	18a	26b	12a	10a	14a	32a	15a	28a	9a
order of y	20a	30a	31b	25b	27b	46a	21b	37b	13b
in pair	36a	42b	51a	40a	33a	52b	35a	50a	17b
	45b	47a	56b	54b	53b	55a	44a	57b	41a
	85*	70	63	56	42	34	46	37	44
Number of	72	45	57	54	67	79	30	26	31
Ss preferring	44	49	69	21	28	81	78	21	69
claim y	44	45	35	35	72	25	56	80	54
	57	84	21	61	63	65	75	82	35
Topic Totals	302	293	245	227	272	284	285	246	233
Topic Averages	60	59	49	45	54	57	57	49	47
Order Effects	23	38	45	52	66	74	62	71	64
(Number of Ss	72	63	57	54	67	79	30	26	31
choosing 1st	44	49	39	87	80	81	30	87	39
argument in	44	63	35	35	72	83	56	80	54
pair)	51	84	87	47	45	65	75	26	35
Topic Totals	234	297	263	275	330	382	253	290	223
Topic Averages	47	59	53	55	66	76	51	58	45

*Numbers underlined are those pairings in which the stronger qualifier occurred in Argument y.

the first instance of Topic B (item #7) and the subject (Manitoba's corn crop) may be quite familar to these youth of a farming community; but it is still not apparent why these two factors of topic would cause them to prefer the claim, "Manitoba has had a bumper corn crop," except for desirability. Also, this effect does not extend to the other instances of the topic. Examination of the other four pairs on Topic B, yields no evidence of one claim on the topic being preferred to the other, especially compared to the other topics. A charting of order preferences is also included in Table 15, and there is no evidence of an order effect accounting for this result. Thus, although topic and order effects are confounded with other variables in the design, an approximate partialling out of those factors yields no indication of topic or order affecting the Prly-ItsP results (or any other results).

At any rate, the re-calculated means show that even discounting the unexpected result of the "Prly-ItsP" pair there remains an ambiguity in the degree expressed by the word "probably". This is not surprising in view of certain other results. Cohen (1960, pp. 168-170) reports results of several studies of "probably" which generally agree with the present findings; with samples of 10-year olds, 13-year olds, and adults, he found consistently that the meaning of "probably" ranged from "certain" to only a fifty percent chance. In

another experiment with 125 adults, Cohen found the percent chance for "probably" to be in between but only slightly different (from 2 to 8 percentage points) from "likely" and "may". Likewise, Martin Joos' (1964, p. 150) analysis of common uses of "probably" suggests to him that it means "perhaps" when uttered by Americans (as contrasted with meaning "It's an odds-on bet" to Englishmen). In a preliminary study by the present investigator, 10 college age Ss (working individually) were asked to give a percentage figure for a large number of qualifying terms, each used in the same sentence. Responding to "probably" appearing twice in the series of qualified sentences (spaced well apart) nine of the 10 Ss were inconsistent in the number given from time one to time two. The nine changed their percentage at least 13 points and three of them, 25 to 45 points. Such instability in response, as well as the variability of meanings found by Cohen, implies an ambiguity of meaning as found in this study with high school students. Perhaps the word "probably", because it has been so commonly and so frequently used, has been used with such wide variability that people are unsure of what the word means on any given occasion.

Qualifiers Alone or in Arguments

Another kind of variability of meaning is evident when comparing argument and Words-only contexts. The meanings attached to some qualifier words appear to change slightly when viewed in isolation

from their meanings when viewed in arguments (see Figure 3 in Chapter III). Arguments introduce additional factors of logic or meaning or whatever, which then combine with any meaning the individual word or phrase might hold for a respondent to convey a given strength to the claim. Another way of stating this is that respondents consider factors other than simply the qualifiers used in an argument when judging the degree of acceptance of the argument claim.

The Awareness of Qualifiers Analyses, reported in Chapter Three (detractor items and content analysis of question responses), support this interpretation by suggesting that logic and argument content also affect the choice of claims, although not dominantly. The influence of topic or content of a statement upon the degree of strength attached to a qualifier was also noted by Cohen and Hansel (1956). Although they were only using single statements, they found that the meaning respondents attributed to some qualifying terms varied with the subject matter of the statement.

Even though the current study used some control of topic and logic factors in the arguments, Ss were left the task of weighing contrary statements on the same topic in making a decision for each pair. Perhaps one alternative was simply more "believable" than the other, or the other words in a statement had greater impact for some qualifiers, or the logical development across the statements differentially affected the weight of the various qualifiers. While the

subject matter was constant within a pairing, the design for this study confounded the individual pairings with topic; it is possible, therefore, that the nature of one topic contributed to a more striking difference between "it is certain" and "I know."

Although the topic analysis reported in Table 15 reveals no clear topic effects, such a complex interaction with topic cannot be fully examined for the qualifiers in this study. All of these are potential factors introduced by inserting the qualifiers into the arguments, but the data of this study are insufficient to conclude what accounted for the differences between the argument and isolated contexts. Even so, the presence of notable differences in meaning according to context suggests that it may not be reasonable to talk of qualifier meanings outside of sentential or (as in this study) intersentential contexts, at least in the case of some qualifiers--such as, "it is certain, it is likely, it is possible, probably."

It has been noted that "it is certain" was weaker in an argument context than in isolation but "it is likely" was stronger in arguments than in isolation. Though not as striking, "it is possible" also increases in degree in arguments over its degree in isolation. In short, the impersonal form seems the most sensitive to the influence of argument factors, or to the change from single vocabulary word responses to intersentence

context responses. On the other hand, this result may be a sign of greater instability of meaning for the "it is" form in qualification, except that there is a noticeable pattern in the apparent interaction of form and context. The word representing "strengthening" or certainty degree in impersonal form loses strength when inserted into arguments whereas the "weakening" degree/impersonal qualifiers gain strength. It is not clear why this occurs and there is no prior research evidence to aid interpretation of this.

Is it even possible that Ss held no stable degree meaning for a qualifier in isolation? Would repeated exposures to such pairings in isolation produce similar results? Even though many of the results in this study were similar for argument or isolation, it is important to note that Ss responded to the words in isolation after having responded to them in arguments; perhaps there was a carryover from how they responded to the qualifiers in arguments. What would happen if the order of responding were reversed? The current study is the first to enable a comparison of qualified arguments with qualifier words alone, and the appearance of context differences raises many questions for further research. In the meantime, the prior research suggests a careful re-assessment of any teaching techniques which deal with meanings of qualifiers outside of sentences and arguments.

General Conclusions

On the basis of the several data analyses and within the limitations of the study design, the following conclusions may be drawn about the response of high school students to qualifiers in argument:

1) The results generally bear out the suggestions of analytic language philosophers on two points:
   a) There are two classes of qualifying words--those which strengthen and those which weaken the assertion;
   b) Somewhat similar meanings are conveyed by the different word forms within a qualifier degree class.
2) Language theorists conclusions are doubtful in the case of qualified vs. unqualified statements--unqualified statements are as strong as or stronger than certainty statements.
3) The strengthening or weakening effects of qualifiers on statements do transfer to claims derived from them.
4) Wording forms of the qualifiers affect the degree of probability associated with the terms, but not in a simple, clearly predictable way.
5) The word "probably" has a rather vague, difficult to interpret meaning which falls between possibility

and likelihood.

6) Factors of content and logic combine with qualifier meanings to give some different results in arguments than when the words are viewed in isolation.

7) Although many students are stable in repeated responses, there are signs of individual variations, inconsistency and uncertainty of response on the part of many who tend to be less intelligent and less able readers.

A general examination of the results leads to the conclusion that high school students do not make fine distinctions among probability terms when responding to them in arguments. This is especially true for students who are inconsistent in their ranking of qualifiers (constituting nearly two thirds of the sample); the consistent Ss in this study were more able to discriminate among the nine terms and the null. The intercorrelations analysis further supports this since with an increase in intelligence or reading there tended to be a wider range of scores across the nine qualifiers (see Chapter Three, p. 64). Otherwise, this general lack of discrimination seems to be associated with (1) the lack of stability of the qualifier meanings across Ss, within Ss (inconsistency), and across analyses, as well as (2) the similarity in meaning of

certain terms (i.e., insignificant differences in impact between various qualifiers).

Teaching Implications

Since this investigation may be regarded as largely an exploratory study, the major implications center on teacher insights into the characteristics of the learner in dealing with qualifiers. In addition, some very tentative suggestions may be made with regard to subject matter concepts and methodology.

Adolescent characteristics.

Data on organismic variables included in this study--intelligence and reading ability--as well as other evidence. may aid interpretation of the nature of the sample responding to qualifiers. To begin with, prior research by Inhelder and Piaget (1958) indicates that the notion of probability with abstract combinations and abstract reasoning develops in the ages 12 to 15; the students in this study were all 16 or older and thus presumably beyond this point of development. But were they? The age estimates of Piaget are often based upon a rather select group of high ability or intellectually privileged youth. It may be that many young people are still within this stage of development at age 16 or so, which could explain the inconsistency and instability of response on the part of two-thirds of the sample. Interestingly, the 38 consistent Ss tended to have the higher intelligence and reading scores and

the inconsistent Ss the lower scores.[2] So-called "lower ability" students are often found to be at earlier stages of language or general development; therefore, the results may indicate that the majority of the students were inconsistent because they have not yet developed the verbal or conceptual abilities for handling abstract probabilities in reasoning.

Is it possible, on the other hand, that students by age 16 have developed the notion of probability in abstract reasoning but not the use of labels for such probability? Perhaps labelling or linguistic marking of abstract probability is a state, yet to develop, beyond the handling of probability in abstracts. Qualifiers, in the many forms for verbally expressing probability, could be an interesting area of research to compare with and complement other lines of research in abstract probability.

Concepts and methods.

The apparent difficulty of adolescents in coping with abstract probabilities of qualifiers is not so surprising considering that language theorists hypothesized meaning clusters (e.g., certainty) with only fine distinctions among the qualifiers of a cluster. Other prior research, reviewed herein, likewise suggested a lack of distinctions and wide variability of qualifier meaning responses for both adults and adolescents. Also, from the experiences of this researcher with secondary school education, it appears that students are very rarely

taught concepts of verbal qualification or the handling of it in arguments. So how could they be expected to make fine distinctions in terms with high reliability? Indeed this study seems to point to a need for such learning as one part of the general context of critical thinking. The fact-opinion distinction, taught in critical thinking, is not sufficient for assessing everyday arguments and may actually create a misleading reliance on verbal cues. Some of the concepts of ordinary language philosophers may offer a beginning for teaching about qualifiers, but one of their principles on the function of certainty words may not be valid. If a student wishes to persuade his peers, he may be more compelling by arguing with unqualified statements than by using qualifiers like "certainly ..." or "it is certain that ..."; such forms of emphasis seem to have zero or even a negative effect in argument.

One group of educational theorists present a possible method of developing consciousness of verbal qualification and subsequent improvement in the **understanding** and use of qualifiers. Raths, Wassermann, Jonas, Rothstein (1967), in their book Teaching for Thinking, recommend marking with a code letter any qualifying words or phrases on a student's paper. The intent is to alert the student to the verbal manifestations of his thinking and heighten his sensitivity to the degree of probability he wished to express. They feel that students should be encouraged to

cultivate habits of accuracy in expression of their degree of certainty (or uncertainty). To accomplish this they suggest class activities in classifying such words according to approximately equal degrees of conviction or placing the words along a continuum from "absolutely true" to "absolutely false." In using such activities the teacher should draw upon the findings of this study and other relevant studies of qualifiers to increase the reliability and generalizability of the class learning. Such teaching techniques together with a utilization of research results can help develop greater precision of language use and critical abilities, which were the ultimate concerns of this study from the outset.

One limitation in the above class activities (from Raths, et al.) is that they involve the qualifier words in isolation without attention to sentence or argument contexts. It has been noted, from the current study as well as from prior research, that a treatment of meaning or vocabulary apart from context may overlook crucial differences in the functioning of probability words in statements or arguments. The above approach, however, could be used as a starting point, with the elements of context--assertion, argument, topic, source, etc.--then introduced into the classifying or ranking activities. A pairing technique, similar to this study design, could even be used as a teaching device. In addition, the lessons could be expanded to include a recognition of the other elements of argument

characterized in Toulmin's (1964) model and other concepts in critical thinking.

Research Implications

The current study attempted to examine selected abstract qualifying terms in contexts previously unexplored and with tight experimental control. Therefore, the endeavor constitutes an exploratory study of only one small part of a vast area. As such, the study has raised general implications for several lines of further research, basic and applied.

A probability in Argument Model. In subsequent research the Ray and Zavos (1966) model of four factors of probability in argument could serve as the basis of an experimental design. In this study, for example, the design attempted to control the factors of probable fact, subjective probability, and probable derivation while varying the probability qualifiers. It should be recognized, however, that the factor of probable derivation may have been confounded with the pairings, and subjective probability is perhaps the hardest factor of all to control. Other methods and designs should be explored for controlling the four factors. It also seems, however, that the paired comparison technique used in this study has excellent potential for introducing control of any factors of argument and is a technique worthy of further consideration.

Further studies could explore many interesting questions

using the Ray and Zavos model. For example, a researcher could vary the qualifiers and the logic of the arguments (probable derivation), while controlling the other two factors, to determine the effect of qualifiers and logic on claim acceptance as well as effects of their interaction. It might also be worthwhile to re-examine the location variable effects upon qualifiers, which proved nonsignificant in this study. Location in reasons may yet be a relevant variable whose effects would show up in another experimental design.

Disfluency correlates. Speech hesitations have been demonstrated to be indications of uncertainty either in terms of selection of the next thought unit or in stressful or tension situations (e.g., Feezel, 1965 a or b). It might be interesting to examine the occurrence of particular qualifiers in the context of speech hesitations. If both qualifiers and hesitations index uncertainty or amount of confidence a person has in his utterances, are they used concurrently or as alternative cues to mental or emotional states? Is there an inverse correlation of strength of qualifier with amount or length of vocalized and silent pauses--e.g., do we find the weaker qualifying terms being used with the longer silent pauses?

Associated variables. The current research did not include the null condition in the set of variables intercorrelated; subsequent research could do so in order to see if the

claim strength derived from the unqualified statement is in any way related to other factors, such as reading, intelligence or grade level. The data on S consistency could also be included in a subsequent intercorrelation analysis.

Quite a number of variables which potentially interact with qualifier usage are worthy of further research. What terms function as qualifiers for Ss at various ages or maturational levels? Are there any differences in the qualifiers applied to claims according to attitude strength or direction (pro or con) on a topic or according to "ego-involvement" with the topic? Is the choice of a qualifier at all related to factors such as grammatical transition probabilities, word association probabilities, anxiety level, ethos of source of reasoning or claim, or the recipient (audience) of the claim? Various organismic, linguistic and communicative factors need to be studied in relation to qualifier usage.

Various populations. Further research could replicate this study of qualifiers with different populations to determine the generality of its findings. For example, college students, adult populations, or various age groups could be examined and compared with the results of this study. Would students (college or high school) respond differently to the qualifier variations after a period of education in logic or critical thinking? Would professional educators--e.g., public

school teachers and university professors--respond differently than others to the qualifiers in arguments?

Along with these variations in populations, a number of descriptive studies are needed to examine the occurrence of given qualifiers in the normal discourse of various groups. One such study might examine the specific qualifying terms used in the discourse of inner city youth and adults (black and white) for comparison with the discourse of middle-class whites and blacks covering such subjects as their own life, problems, surroundings, future, etc. One purpose would be to determine if lower probability terms signal a less confident or hopeful attitude among minority group members as contrasted with the others. Or is the converse true--that black youth especially are more prone to assertions of a certain or absolute nature while whites attempt more subtle distinctions in degrees through probability terms? Such language insights might prove to be one small step toward better understanding of and solutions to serious social problems. Another descriptive study might focus on the analysis of transcriptions of high school students discussions and arguments, both in and out of class; do they use more qualifiers of a particular type in one situation than in another? What are the qualifiers they use? Such a study could even provide additional insight into the findings of this study.

In general, content analysis techniques could be applied

to qualifier usage in a wide variety of written and oral messages. As one example, Joseph DeVito (1966) studied the occurence of a number of different types of expressions indicating quantification, qualification or self-reference in the oral and written discourse of college speech instructors. In addition to the interesting finding that more such words were used in the oral than in the written verbalizations, his study points up the fact that there are a great many such imprecise qualifying and quantifying terms occuring in everyday and specialized discourse which deserve study. A count of the qualifiers alone as listed in Roget's Pocket Thesaurus yields over 135 such words or phrases; quantifying words (e.g., some, a few, most) and logical justification terms, (e.g., since, so, thus) constitute at least another 135 expressions. These quantifiers and justifiers also warrant further study. Particular quantifiers have been studied experimentally by several (e.g., Cohen, 1960, 1964; DeVito, 1966; Helson, et al., 1956) and justifiers have been analyzed by some language theorists (e.g., Ryle, 1965; Urmson, 1956); but these studies are limited to only a few terms and have not included argument contexts. Clearly, from the scant prior research, this is a relatively untapped area of psycholinguistic and educational research.

Toward better theory. Since qualifiers are a common, integral part of everyday arguments, further study is important to

formulating a full theory of argument; but it is also necessary to progress toward a more general theory of discourse. For example, Kenneth Pike's pioneering work with the tagmemic approach to language analysis is closely related to the concerns of the current study. Tagmemic analysis goes beyond the level of sentences to examine their distribution in paragraphs and larger units of discourse; it attempts to combine situational roles (actor, goal, setting, etc) with grammatical roles (subject, object, locative, etc.) in understanding a sequence of sentences (Young and Becker, 1966). Similarly, this study was concerned with the place of qualifier words within the intersentence relations of an argument and, therefore, considered functional elements of argument as well as grammatical elements of sentences. It seems that a fully developed system of tagmemic analysis would have to include the operation of qualifiers in arguments. Such theoretical work in discourse analysis appears to be most compatible with and would profit from the work of Toulmin and other analytic language philosophers as well as that of the present investigation.

References

Allen, R. R., Feezel, J. D., & Kauffeld, F. J. A taxonomy of concepts and critical abilities related to the evaluation of verbal arguements. Occasional Paper Number 9. Wisconsin Research and Development Center, The University of Wisconsin, Madison, August, 1967.

Austin, J. L. Other minds. In A. Flew (Ed.), Logic and language. first and second series, Garden City, M.Y.: Anchor Books, 1965, 342-380.

Buyssens, E. Speaking and thinking from the linguistic standpoint. In G. Revesz (Ed.), Thinking and speaking: A symposium. Amsterdam: North Holland Publ. Co., 1954. Also in Acta Psycol., 1954, 10, 136-164.

Cohen, J. Subjective probability. Scientific American. 1957, 128-138.

Cohen, J. Chance, skill, and luck: The psychology of guessing and gambling. Baltimore, Maryland: Penguin Books, 1960.

Cohen, J. Behavior in uncertainty and its social implications. London: George Allen and Unwin, 1964.

Cohen, J., & Hansel, M. Risk and gambling: The study of subjective probability. London: Longams, Green, 1956.

DeVito, J. A. Psychogrammatical factors in oral and written discourse by skilled communicators. Speech Monographs, 1966, 33, 73-76.

Feezel, J. D. The effects of preparation and feedback upon speech hesitations. Masters thesis, The University of Wisconsin, 1965. (a)

Feezel, J. D. The effects of preparation and feedback upon speech hesitations. Central States Speech Journal, 1965, 16, 182-183. (b)

Ferguson, G. A. Statistical analysis in psychology and education. New York: McGraw-Hill, 1959

Findlay, J. N. Probability without nonsense. Philosophical Quarterly, 1952, 2, 218-239.

Frase, L. T. Belief, incongruity, and syllogistic reasoning. Psychological Reports, 1966, 18, 982. (a)

Frase, L. T. Validity judgments of syllogisms in relation to two sets of terms. Journal of Educational Psychology, 1966, 57, 239-245. (b)

Hall, R. Assuming: One set of positing words. Philosophical Review, 1958, 67, 52-75.

Helson, H., Dworkin, R. S., & Michels, W. C. Quantitative denotations of common terms as a function of background. American Journal of Psychology, 1956, 69, 194-208.

Henle, M. On the relation between logic and thinking. Psychological Review, 1962, 69, 366-378.

Howes, D. A word count of spoken English. Journal of Verbal Learning and Verbal Behavior, 1966, 5, 572-604.

Hughes, R. E. & Duhamel, P. A. Rhetorical qualities of words. In Jane Blankenship and R. Wilhoit (Eds.), Selected readings in public speaking. Belmont, Calif.: Dickenson Publ. Co., 1966, 130-156.

Inhelder, B., & Piaget, J. The growth of logical thinking from childhood to adolescence. A. Parsons & S. Milgram (Trans.), [New York:] Basic Books, [1958].

Jackson, J. E., & Fleckenstein, M. An evaluation of some statistical techniques used in the analysis of paired comparison data. Biometrics, 1957, 51-64.

Joos, M. The English verb: Form and meanings. Madison: The University of Wisconsin Press, 1964.

Jrgensen, J. Some remarks concerning thinking and talking. In G. Revesz (Ed.), Thinking and speaking: A symposium. Amsterdam: North Holland Publ. Co., 1954, 123-135.

Lefford, A. The influence of emotional subject matter on logical reasoning. Journal of General Psychology, 1946, 34, 127-151.

Morgan, J. J. B., & Morton, J. T. The distortion of syllogistic reasoning produced by personal convictions. Journal of Social Psychology, 1944, 20, 39-59.

McGuire, W. J., A syllogistic analysis of cognitive relationships. In M. J. Rosenberg, and others, Attitude organization and chance. New Haven: Yale University Press, 1960, 65-111.

Raths, L. E., Wassermann, S., Jonas, A., & Rothstein, A. M. Teaching for thinking: Theory and application. Columbus, Ohio: Charles E. Merrill, 1967.

Ray, J., & Zavos, H. Reasoning and argument: Some special problems and types. In G. R. Miller & T. R. Nilsen (Eds.), Perspectives on argumentation. Chicago: Scott, Foresman, 1966, 80-88 in particular.

Scheffé, J. An analysis of variance for paired comparisons. American Statistical Association Journal, 1952, 47, 381-400.

Schunk, J. F. Probability and desirability determinants of relationships among beliefs in rhetorical propositions. (Doctoral dissertation, University of Illinois, 1967) Ann Arbor, Michigan: University Microfilms, 1968, No. 68-8218.

Sells, S. B. The atmospheric effect: An experimental study of reasoning. Archives of Psychology, No. 200, 1936, 1-72.

Thistlethwaite, D. Attitude and structure as factors in the distortion of reasoning. Journal of Abnormal and Social Psychology, 1950, 45, 442-458.

Thorndike, E. L., & Lorge, I. The teacher's workbook of 30,000 words. Columbia: Teachers College Press, 1944, fourth printing 1963.

Toulmin, S. The uses of argument. London: Cambridge Univer. Press, 1964.

Urmson, J. O. Parenthetical verbs. In A. Flew (Ed.), Essays in conceptual analysis. London: Macmillan, 1956, 192-212.

Woodworth, R. S., & Sells, S. B. An atmosphere effect in formal syllogistic reasoning. Journal of Experimental Psychology, 1935, 18, 451-460.

Winer, B. J. Statistical principles in experimental design. New York: McGraw-Hill, 1962.

Young, R. E., & Becker, A.L. Toward a modern theory of rhetoric: A tagmemic contribution. In J. A. Emig, J. T. Fleming, & H. M. Popp (Eds.), Language and Learning. New York: Harcourt, Brace & World, 1966.

APPENDIX A

Complete Data Location (DL) Booklet

Name _____
last, first m. i.

Age ____ Sex M F

AN EXERCISE IN JUDGING ARGUMENTS

On the following pages are a number of arguments for you to read and compare. An argument is a set of three sentences interrelated so that the information in the first two sentences leads to the idea presented in the third sentence; in other words, the final sentence is a conclusion which follows from the other two sentences.

Sometimes arguments on a topic from two different persons contradict each other. However, one argument may present better backing for a conclusion than does the other argument. This exercise presents such inconsistent or contradictory arguments. After reading the two arguments thoroughly, your task will be to make two decisions:

1) Which argument makes the stronger conclusion?

2) How much stronger is it than the other conclusion?

Now turn the page for an example of how you will do this.

EXAMPLE

L

Surely Harry was born in Bermuda. People born in Bermuda are British subjects. Therefore, Harry is a British subject.

R

Harry was born in Haiti. Perhaps people born in Haiti are French subjects. Therefore, Harry is a French subject.

— — — — / — — — —

Which argument leads to the stronger conclusion (the "Therefore" sentence)? Indicate your decision after comparing these two arguments by marking an "X" in a blank on the right side or on the left side; the closer your mark is to one argument the stronger your preference is for that argument over the other one. That is, mark your decision as follows:

If L is a great deal stronger than R	X				/				
If L is much stronger than R		X			/				
If L is moderately stronger than R			X		/				
If L is slightly stronger than R				X	/				
If R is slightly stronger than L					/	X			
If R is moderately stronger than L					/		X		
If R is much stronger than L					/			X	
If R is a great deal stronger than L					/				X

Be sure you read each argument completely and carefully before marking your decision. Mark every scale as you read through the booklet and do not look back at earlier arguments. Now turn the page and begin.

I suspect that the English Dept. at State U. will begin its major study of ghetto grammar this fall. Large research studies in poverty areas result from the granting of federal funds. Therefore, they have received federal funds.	(1)	It is likely that the English Dept. at State U. will cancel its major study of ghetto grammar this fall. Cancellation of studies in poverty areas results from the cutting of federal funds Therefore, their federal funds have been cut.
— — — — / — — — —		
According to indications, India supports the government of Burma. Nations supporting Burma's government also favor area mutual defense agreements. Therefore, India wants a mutual defense pact.	(2)	According to indications, certain India opposes the government of Burma. Countries opposing Burma's government also dislike cooperative defense pacts. Therefore, India opposes a mutual defense pla
— — — — / — — — —		
It is certain that Ellen's college education is financed entirely by her part-time work. Students who have to work part-time do not have much study time. Therefore, Ellen has little study time.	(3)	Probably Ellen has a full expense scholarship in biology for her co lege education. Students with fu scholarships have quite a bit of time for their studies. Therefor Ellen has ample study time.
— — — — / — — — —		

From the information given on it, Plainfield High is a public school. Public schools are supported through local taxes. Therefore, the education of Plainfield High students is financed by local taxation.	(4)	From the facts released on it, it is certain that Plainfield High is a private school. Private schools are backed by tuition and donations. Therefore, the education of Plainfield High students is paid for by tuition and donatic
— — — — / — — — —		
It is certain that the cloth-bound book Hoopla is being printed in paperback. Books are printed in paperback if they sold well in cloth-bound editions. Then Hoopla sold successfully in cloth-bound form.	(5)	It is likely that the cloth-bound book Hoopla is now out-of-print. Books which are out-of-print have not sold well in the previous edition. Then Hoopla did not sel very well in its cloth-bound editi
— — — — / — — — —		
The Simpson family almost always goes to church on Sunday mornings. Regular church attendance indicates a strong religious faith usually. Therefore, the Simpsons are very religious people.	(6)	The Simpson family sometimes stay: at home on Sunday mornings. A repeated absence from church ofte indicates doubts about religion. Therefore, the Simpsons are doubtful toward religion.
— — — — / — — — —		

Probably Manitoba is going to buy corn on the world market. The purchase of corn on the world market results from a corn crop failure. Therefore, Manitoba has suffered a corn crop failure.	(7)	It is possible that Manitoba is planning to sell corn on the world market. The sale of corn on the world market results from a bumper crop of corn. Therefore, Manitoba has had a bumper corn crop.
— — — — / — — — —		
It is likely that Gov. Goodman has been making a series of speaking tours around the U. S. Extensive speaking around the nation in an election year indicates interest in the Presidency or Vice Presidency. Therefore, he is interested in the Presidency or Vice Presidency.	(8)	Gov. Goodman has been staying home to speak at many banquets in his state. Frequent speaking around the state in an election year indicates interest in the Senate or in re-election. Therefore, he is interested in re-election or a Senate seat.
— — — — / — — — —		
According to indications, it is possible that India opposes the government of Burma. Countries opposing Burma's government also dislike cooperative defense pacts. Therefore, India opposes a mutual defense plan.	(9)	According to indications, I know that India supports the government of Burma. Nations supporting Burma's government also favor area mutual defense agreements. Therefore, India wants a mutual defense pact.
— — — — / — — — —		

From the facts released on it, I suspect that Plainfield High is a private school. Private schools are backed by tuition and donations. Therefore, the education of Plainfield High students is paid for by tuition and donations.	(10)	From the information given on it, possibly Plainfield High is a public school. Public schools are supported through local taxes. Therefore, the education of Plainfield High students is financed by local taxation.
— — — — / — — — —		
Susan will join an honorary sorority in school this year. Girls have to have B averages or better to get into this sorority. Therefore, Susan gets good grades in her courses.	(11)	Susan will join a social sorority at school this year. The members of this sorority are very popular on campus. Therefore, Susan is well-known around the campus.
— — — — / — — — —		
It is certain that the English Dept. at State U. will cancel its major study of ghetto grammar this fall. Cancellation of studies in poverty areas results from the cutting of federal funds. Therefore, their federal funds have been cut.	(12)	I know that the English Dept. at State U. will begin its major study of ghetto grammar this fall. Large research studies in poverty areas result from the granting of federal funds. Therefore, they have received federal funds.
— — — — / — — — —		

According to indications, I suspect that India supports the government of Burma. Nations supporting Burma's government also favor area mutual defense agreements. Therefore, India wants a mutual defense pact.	(13)	According to indications, it is certain that India opposes the government of Burma. Countries opposing Burma's government also dislike cooperative defense pacts. Therefore, India opposes a mutual defense plan.
I know that Ellen has a full expense scholarship in biology for her college education. Students with full scholarships have quite a bit of time for their studies. Therefore, Ellen has ample study time.	(14)	I believe that Ellen's college education is financed entirely by her part-time work. Students who have to work part-time do not have much study time. Therefore, Ellen has little study time.
Possibly the cloth-bound book Hoopla is now out-of-print. Books which are out-of-print have not sold well in the previous edition. Then Hoopla did not sell very well in its cloth-bound edition.	(15)	I know that the cloth-bound book Hoopla is being printed in paperback. Books are printed in paperback if they sold well in cloth-bound editions. Then Hoopla sold successfully in cloth-bound form.
I suspect that the English Dept. at State U. will begin its major study of ghetto grammar this fall. Large research studies in poverty areas result from the granting of federal funds. Therefore, they have received federal funds.	(16)	It is likely that the English Dept at State U. will cancel its major studies this fall. Cancellation of studies results from cutting state or federal funds. Therefore their federal poverty funds were cut.
According to indications, I believe that India supports the government of Burma. Nations supporting Burma's government also favor area mutual defense agreements. Therefore, India wants a mutual defense pact.	(17)	According to indications, it is likely that India opposes the government of Burma. Countries opposing Burma's government also dislike cooperative defense pacts. Therefore, India opposes a mutual defense plan.
Probably Gov. Goodman has been staying home to speak at many banquets in his state. Frequent speaking around the state in an election year indicates interest in the Senate or in re-election. Therefore, he is interested in re-election or a Senate seat.	(18)	I suspect that Gov. Goodman has be making a series of speaking tours around the U. S. Extensive speaking around the nation in an election year indicates interest in th Presidency or Vice Presidency. Therefore, he is interested in the Presidency or Vice Presidency.

It is certain that the governor will sign the new school construction bill, No. 617. The governor signing a bill makes it law. Therefore, the school construction bill will become a law.	(19)	I believe that the governor will veto the new school construction bill, No. 617. The governor vetoing a bill sends it back to the legislature. Therefore, Bill No. 617 will return to the legislature.
— — — — / — — — —		
It is possible that Gov. Goodman has been staying home to speak at many banquets in his state. Frequent speaking around the state in an election year indicates interest in the Senate or in re-election. Therefore, he is interested in re-election or a Senate seat.	(20)	It is certain that Gov. Goodman has been making a series of speaking tours around the U. S. Extensive speaking around the nation in an election year indicates interest in the Presidency or Vice Presidency. Therefore, he is interested in the Presidency or Vice Presidency.
— — — — / — — — —		
It is possible that the cloth-bound book Hoopla is being printed in paperback. Books are printed in paperback if they sold well in cloth-bound editions. Then Hoopla sold successfully in cloth-bound form.	(21)	The cloth-bound book Hoopla is now out-of-print. Books which are out-of-print have not sold well in the previous edition. Then Hoopla did not sell very well in its cloth-bound edition.
— — — — / — — — —		
Plainfield High is a public school. Public schools are supported through local taxes. Therefore, the education of Plainfield High students is financed by local taxation.	(22)	It is certain that Plainfield High is a private school. Private schools are backed by tuition and donations. Therefore, the education of Plainfield High students is financed by greater funds.
— — — — / — — — —		
Probably Gov. Goodman has been staying home to speak at local banquets in his state. Speaking at banquets indicates a good after-dinner speaking ability. Therefore, Gov. Goodman is running for re-election.	(23)	I suspect that Gov. Goodman has been making a series of speaking tours around the U. S. Extensive speaking around the nation in an election year indicates an interest in the Presidency or Vice Presidency. Therefore, he is interested in the Presidency or Vice Presidency.
— — — — / — — — —		
It is likely that Johnny turns his classwork in on time. Turning work in on time helps one to do well in courses. So, Johnny will do well in his courses.	(24)	Probably Johnny turns his classwork in late. Turning work in late contributes to doing poorly in courses. So, Johnny will do poorly in his courses.
— — — — / — — — —		

From the information given on it, I know that Plainfield High is a public school. Public schools are supported through local taxes. Therefore, the education of Plainfield High students is financed by local taxation.

(25)

From the facts released on it, probably Plainfield High is a private school. Private schools are backed by tuition and donation Therefore, the education of Plainfield High students is paid for by tuition and donations.

— — — — / — — — —

It is likely that Manitoba is going to buy corn on the world market. The purchase of corn on the world market results from a corn crop failure. Therefore, Manitoba has suffered a corn crop failure.

(26)

Possibly Manitoba is planning to sell corn on the world market. The sale of corn on the world mark results from a bumper crop of corn Therefore, Manitoba has had a bumper corn crop.

— — — — / — — — —

Ellen's college education is financed entirely by her part-time work. Students who have to work part-time do not have much study time. Therefore, Ellen has little study time.

(27)

I suspect that Ellen has a full expense scholarship in biology for her college education. Students with full scholarships have quite a bit of time for their studies. Therefore, Ellen has ample study time.

— — — — / — — — —

I believe that Johnny turns his classwork in late. Turning work in late contributes to doing poorly in courses. So, Johnny will do poorly in his courses.

(28)

Johnny turns his classwork in on time. Turning work in on time helps one to do well in courses. So, Johnny will do well in his courses.

— — — — / — — — —

I know that McDonnald is a Scotchman. Probably Scotchmen are Protestants. Therefore, McDonnald is a Lutheran.

(29)

I know that McDonnald is an Irishma Probably Irishmen are Catholics. Therefore, McDonnald is a Catholic.

— — — — / — — — —

Certainly Manitoba is planning to sell corn on the world market. The sale of corn on the world market results from a bumper crop of corn. Therefore, Manitoba has had a bumper corn crop.

(30)

It is certain that Manitoba is going to buy corn on the world market. The purchase of corn on the world market results from a corn crop failure. Therefore, Manitoba has suffered a corn crop failure.

— — — — / — — — —

Probably the English Dept. at State U. will begin its major study of ghetto grammar this fall. Large research studies in poverty areas result from the granting of federal funds. Therefore, they have received federal funds.	(31)	Certainly the English Dept. at State U. will cancel its major study of ghetto grammar this fall. Cancellation of studies in poverty areas results from the cutting of federal funds. Therefore, their federal funds have been cut.
The governor will veto the new school construction bill, No. 617. The governor vetoing a bill sends it back to the legislature. Therefore, Bill No. 617 will return to the legislature.	(32)	Probably the governor will sign the new school construction bill, No. 617. The governor signing a bill makes it law. Therefore, the school construction bill will become a law.
Certainly Ellen has a full expense scholarship in biology for her college education. Students with full scholarships have quite a bit of time for their studies. Therefore, Ellen has ample study time.	(33)	It is likely that Ellen's college education is financed entirely by her part-time work. Students who have to work part-time do not have much study time. Therefore, Ellen has little study time.
It is certain that the city track meet will be held at Owen Field. Owen Field has bleachers for seating 1,500 people. Therefore, only about 1/2 of the 3,000 students will be able to watch the meet.	(34)	The city track meet will be held at Pierce Stadium. Pierce Stadium will seat 3,000 persons. Therefore, almost all 3,000 students will be able to get a seat for the meet.
I believe that the cloth-bound book Hoopla is now out-of-print. Books which are out-of-print have not sold well in the previous edition. Then Hoopla did not sell very well in its cloth-bound edition.	(35)	Probably the cloth-bound book Hoopla is being printed in paperback. Books are printed in paperback if they sold well in cloth-bound editions. Then Hoopla sold successfully in cloth-bound form.
Possibly Gov. Goodman has been staying home to speak at many banquets in his state. Frequent speaking around the state in an election year indicates interest in the Senate or in re-election. Therefore, he is interested in re-election or a Senate seat.	(36)	I believe that Gov. Goodman has been making a series of speaking tours around the U. S. Extensive speaking around the nation in an election year indicates interest in the Presidency or Vice Presidency. Therefore, he is interested in the Presidency or Vice Presidency.

I know that Johnny turns his classwork in on time. Turning work in on time helps one to do well in courses. So, Johnny will do well in his courses.	(37)	I suspect that Johnny turns his classwork in late. Turning work in late contributes to doing poorly in courses. So, Johnny will do poorly in his courses.
It is likely that Manitoba is going to buy corn on the world market. A country buying corn on the world market results from a change in government handling of agriculture. Therefore, Manitoba has suffered a corn crop failure.	(38)	Possibly Manitoba is planning to sell corn on the world market. A country selling corn on the world market results from a bumper crop. Therefore, Manitoba has had a bumper corn crop.
A lot of new four-lane highways are being built in the western part of the state. Extensive highway construction apparently means the highway budget was increased. Therefore, the state legislature has increased the highway funds.	(39)	It seems that construction of new highways in the west of the state is slowing to a near standstill. A slowdown in construction means the highway budget has been reduced. Therefore, the state legislature has cut the highway funds.
From the facts released on it, it is possible that Plainfield High is a private school. Private schools are backed by tuition and donations. Therefore, the education of Plainfield High students is paid for by tuition and donations.	(40)	From the information given on it, it is likely that Plainfield High is a public school. Public schools are supported through local taxes. Therefore, the education of Plainfield High students is financed by local taxation.
According to indications, possibly India opposes the government of Burma. Countries opposing Burma's government also dislike cooperative defense pacts. Therefore, India opposes a mutual defense plan.	(41)	According to indications, probably India supports the government of Burma. Nations supporting Burma's government also favor area mutual defense agreements. Therefore, India wants a mutual defense pact.
Manitoba is going to buy corn on the world market. The purchase of corn on the world market results from a corn crop failure. Therefore, Manitoba has suffered a corn crop failure.	(42)	I know that Manitoba is planning to sell corn on the world market. The sale of corn on the world market results from a bumper crop of corn. Therefore, Manitoba has had a bumper corn crop.

The state softball finals will be held at Westside Field next month. We know Carter, Central and Westside Fields are used for softball games in town. Therefore, Carter and Central Fields are still available for Little League games next month.

(43)

The state softball finals will take place at Central Field next month. We guess Boyd, Central and Wilson Fields are used for softball games in town. Therefore, the Little League can use Boyd and Wilson for their games next month.

— — — — / — — — —

Certainly the cloth-bound book Hoopla is now out-of-print. Books which are out-of-print have not sold well in the previous edition. Then Hoopla did not sell very well in its cloth-bound edition.

(44)

I suspect that the cloth-bound book Hoopla is being printed in paperback. Books are printed in paperback if they sold well in cloth-bound editions. Then Hoopla sold successfully in cloth-bound form.

— — — — / — — — —

I know that Gov. Goodman has been making a series of speaking tours around the U. S. Extensive speaking around the nation in an election year indicates interest in the Presidency or Vice Presidency. Therefore, he is interested in the Presidency or Vice Presidency.

(45)

Certainly Gov. Goodman has been staying home to speak at many banquets in his state. Frequent speaking around the state in an election year indicates interest in the Senate or in re-election. Therefore, he is interested in re-election or a Senate seat.

— — — — / — — — —

Certainly the governor will veto the new school construction bill, No. 617. The governor vetoing a bill sends it back to the legislature. Therefore, Bill No. 617 will return to the legislature.

(46)

Possibly the governor will sign the new school construction bill, No. 617. The governor signing a bill makes it law. Therefore, the school construction bill will become a law.

— — — — / — — — —

I believe that Manitoba is planning to sell corn on the world market. The sale of corn on the world market results from a bumper crop of corn. Therefore, Manitoba has had a bumper corn crop.

(47)

I suspect that Manitoba is going to buy corn on the world market. The purchase of corn on the world market results from a corn crop failure. Therefore, Manitoba has suffered a corn crop failure.

— — — — / — — — —

Certainly Ellen has a full expense scholarship in biology for her college education. Students with full scholarships have quite a bit of time for their studies. Therefore, Ellen has ample study time.

(48)

It is likely that Ellen's college education is financed entirely by her part-time work. Students who have to work part-time do not have much study time. Therefore, Ellen has little study time.

— — — — / — — — —

According to indications, possibly India opposes the government of Burma. Countries opposing Burma's government also dislike cooperative defense pacts. Therefore, India opposes a mutual defense plan.	(49)	According to indications, probably India supports the government of Burma. Nations supporting Burma's government also favor area mutual defense agreements. Therefore, India wants a mutual defense pact.
Certainly Johnny turns his classwork in late. Turning work in late contributes to doing poorly in courses. So, Johnny will do poorly in his courses.	(50)	It is possible that Johnny turns his classwork in on time. Turning work in on time helps one to do well in courses. So, Johnny will do well in his courses.
It is possible that the English Dept. at State U. will cancel its major study of ghetto grammar this fall. Cancellation of studies in poverty areas results from the cutting of federal funds. Therefore, their federal funds have been cut.	(51)	I believe that the English Dept. at State U. will begin its major study of ghetto grammar this fall. Large research studies in poverty areas result from the granting of federal funds. Therefore, they have received federal funds.
I know that the governor will sign the new school construction bill, No. 617. The governor signing a bill makes it law. Therefore, the school construction bill will become a law.	(52)	It is likely that the governor will veto the new school construction bill, No. 617. The governor vetoing a bill sends it back to the legislature. Therefore, Bill No. 617 will return to the legislature.
Possibly Ellen's college education is financed entirely by her part-time work. Students who have to work part-time do not have much study time. Therefore, Ellen has little study time.	(53)	It is possible that Ellen has a full expense scholarship in biology for her college education. Students with full scholarships have quite a bit of time for their studies. Therefore, Ellen has ample study time.
From the information given in it, I believe that Plainfield High is a public school. Public schools are supported through local taxes. Therefore, the education of Plainfield High students is financed by local taxation.	(54)	From the facts released on it, certainly Plainfield High is a private school. Private schools are backed by tuition and donations. Therefore, the education of Plainfield High students is paid for by tuition and donations.

I suspect that the governor will veto the new school construction bill, No. 617. The governor vetoing a bill sends it back to the legislature. Therefore, Bill No. 617 will return to the legislature.

(55)

It is possible that the governor will sign the new school construction bill, No. 617. The governor signing a bill makes it law. Therefore, the school construction bill will become a law.

— — — — / — — — —

The English Dept. at State U. will begin its major study of ghetto grammar this fall. Large research studies in poverty areas result from the granting of federal funds. Therefore, they have received federal funds.

(56)

Possibly the English Dept. at State U. will cancel its major study of ghetto grammar this fall. Cancellation of studies in poverty areas results from the cutting of federal funds. Therefore, their federal funds have been cut.

— — — — / — — — —

Possibly Johnny turns his classwork in on time. Turning work in on time helps one to do well in courses. So, Johnny will do well in his courses.

(57)

It is certain that Johnny turns his classwork in late. Turning work in late contributes to doing poorly in courses. So, Johnny will do poorly in his courses.

— — — — / — — — —

It is certain that the governor will sign the new school construction bill, No. 617. The governor signing a bill makes it law. Therefore, the school construction bill will become a law.

(58)

I believe that the governor will veto the new school construction bill, No. 617. The governor vetoing a bill sends it back to the legislature. Therefore, Bill No. 617 will return to the legislature.

— — — — / — — — —

It is possible that the cloth-bound book Hoopla is being printed in paperback. Books are printed in paperback if they sold well in cloth-bound editions. Then Hoopla sold successfully in cloth-bound form.

(59)

The cloth-bound book Hoopla is now out-of-print. Books which are out-of-print have not sold well in the previous edition. Then Hoopla did not sell very well in its cloth-bound edition.

— — — — / — — — —

I know that Johnny turns his classwork in on time. Turning work in on time helps one to do well in courses. So, Johnny will do well in his courses.

(60)

I suspect that Johnny turns his classwork in late. Turning work in late contributes to doing poorly in courses. So, Johnny will do poorly in his courses.

— — — — / — — — —

At this point we would like your brief reactions to this exercise.

1. What factor in the arguments most influenced your decisions?

2. Were there any other factors which you took into consideration?

3. Do you have any comments on particular problems you had in making your decision?

Okay, now go on to the next page.

Look at the following pairs of words or clauses and mark the scales to show which expresses stronger belief and how much stronger, as you did in the previous exercise.

certainly	___	___	___	___	/	___	___	___	___	I believe
probably	___	___	___	___	/	___	___	___	___	it is possible
I believe	___	___	___	___	/	___	___	___	___	possibly
it is possible	___	___	___	___	/	___	___	___	___	I know
I suspect	___	___	___	___	/	___	___	___	___	probably
certainly	___	___	___	___	/	___	___	___	___	it is possible
it is possible	___	___	___	___	/	___	___	___	___	I believe
I know	___	___	___	___	/	___	___	___	___	certainly
probably	___	___	___	___	/	___	___	___	___	it is likely
possibly	___	___	___	___	/	___	___	___	___	it is possible

it is possible	___	___	___	___	/	___	___	___	___	I suspect
I suspect	___	___	___	___	/	___	___	___	___	possibly
it is likely	___	___	___	___	/	___	___	___	___	I suspect
I know	___	___	___	___	/	___	___	___	___	it is likely
I believe	___	___	___	___	/	___	___	___	___	it is certain
it is likely	___	___	___	___	/	___	___	___	___	possibly
it is certain	___	___	___	___	/	___	___	___	___	I suspect
probably	___	___	___	___	/	___	___	___	___	I believe
possibly	___	___	___	___	/	___	___	___	___	certainly
I suspect	___	___	___	___	/	___	___	___	___	I know
it is certain	___	___	___	___	/	___	___	___	___	it is possible
it is likely	___	___	___	___	/	___	___	___	___	it is certain
it is certain	___	___	___	___	/	___	___	___	___	probably

I believe	___	___	___	___	/	___	___	___	___	I suspect
probably	___	___	___	___	/	___	___	___	___	I know
possibly	___	___	___	___	/	___	___	___	___	it is certain
I know	___	___	___	___	/	___	___	___	___	I believe
I believe	___	___	___	___	/	___	___	___	___	it is likely
I suspect	___	___	___	___	/	___	___	___	___	certainly
it is likely	___	___	___	___	/	___	___	___	___	certainly
it is possible	___	___	___	___	/	___	___	___	___	it is likely
certainly	___	___	___	___	/	___	___	___	___	probably
certainly	___	___	___	___	/	___	___	___	___	it is certain
it is certain	___	___	___	___	/	___	___	___	___	I know
I know	___	___	___	___	/	___	___	___	___	possibly
possibly	___	___	___	___	/	___	___	___	___	probably

APPENDIX B

Data for Reliability Repeated Response Analysis

Reliabilities-Repeat Items

WL Grp.	X	Y*	X	Y	X	Y*	X	Y*	X	Y*	Consistent
Item	33	48	41	49	19	58	21	59	37	60	
Ss 1	3	-1	2	2	-1	-3	-1	4	-2	-3	
2	-4	-4	2	1	3	-4	2	4	-4	-4	x
3	-2	1	-1	1	3	-3	3	2	-2	-2	
4	3	3	2	2	2	3	-2	-2	2	3	x
5	-4	-4	2	2	-4	-4	4	4	-4	-3	x
6	-3	-1	1	-1	-2	-4	2	1	-3	-3	x
7	4	-2	3	4	-4	-3	-3	1	-1	-2	
8	4	3	3	3	3	4	3	-4	-4	-4	x
9	-3	-1	1	1	-3	-3	2	2	-3	-3	x
10	2	2	1	2	-1	-2	1	4	-3	-4	x
11	-1	-4	-2	-4	4	1	4	2	4	1	x
12	-1	1	2	2	-3	-2	-3	-2	-2	-2	x
13	-1	-1	2	1	-2	-2	2	2	-2	-1	x
14	-3	-2	1	1	2	-4	1	4	-1	-1	
15	-3	-4	3	-3	2	-2	3	3	-4	-4	x
16	3	3	-2	-2	-3	3	3	3	-2	-2	x
17	-2	-2	3	2	-3	-3	4	3	-2	1	x
18	-2	-2	-1	1	-1	-2	3	4	-2	-2	x
19	-3	-3	-3	-3	3	3	3	3	-3	-3	x
20	-4	-3	-3	-3	4	3	3	3	-4	-4	x
21	2	2	-1	-2	2	-3	-2	3	2	-3	
22	-2	-1	2	3	-1	-3	2	1	-2	-3	x
23	-3	-3	3	3	-1	-3	-3	3	3	3	x
24	-2	1	1	1	-3	-2	3	2	-2	-3	x
25	-4	-3	2	4	-2	-3	4	3	-4	-3	x
26	3	-1	1	--	-4	-3	2	2	-3	-4	x
27	-1	-2	-1	-1	2	2	1	1	-2	-2	x
28	-4	-3	-2	-2	-3	-3	3	3	-4	-4	x
29	-2	-2	1	1	-2	-3	2	2	-1	-3	x
30	-1	1	-1	1	-1	-1	-2	-1	1	1	x
31	3	3	2	-2	-2	-2	2	2	-2	-2	x
32	-2	-2	3	3	-2	-3	-3	-3	-3	-3	x
33	-3	-3	2	1	-2	-3	2	2	-3	-4	x
34	-2	2	-1	-4	1	-2	2	1	1	-2	
35	4	4	-2	4	3	4	-4	-4	-4	-4	x
36	-3	-3	2	3	-1	-2	2	3	4	1	x
37	2	3	3	4	-4	-4	1	4	3	3	x
											31

*Y is repeat of item X

Reliabilities-Repeat Items

DL Grp.	X	Y*	X	Y	X	Y	X	Y	X	Y	Consistent
Ss	33	48	41	49	19	58	21	59	37	60	
1	-3	-3	-1	-1	2	-3	2	-1	-2	-3	
2	3	1	1	-2	-3	-3	2	-1	3	-1	
3	-1	-2	1	1	-3	-2	4	3	-2	-2	x
4	-2	-1	1	1	-3	-3	4	3	-3	-2	x
5	-1	-1	1	1	--	-2	--	2	-1	-1	x
6	-1	-1	1	1	-1	-3	3	3	-2	-3	x
7	3	3	2	2	-1	-2	-3	-4	-1	-1	x
8	-3	-3	2	2	-4	-4	4	4	-2	-3	x
9	-1	-3	2	2	-4	-3	3	3	-3	-3	x
10	3	3	2	2	-3	-2	-2	3	-2	-2	x
11	-2	-3	-	3	-4	-3	2	2	-2	-2	x
12	-3	-3	2	2	-3	-4	4	3	-4	-3	x
13	-3	3	3	3	2	3	4	-2	3	3	
14	-1	-1	-1	-1	-1	-1	2	-1	-2	-1	x
15	3	2	-1	1	2	-3	-2	-1	-3	2	
16	-4	-4	2	2	1	1	-4	-4	-4	-4	x
17	-3	-1	1	1	-3	-3	-4	2	-4	-3	x
18	2	1	-2	-1	1	1	-1	-1	1	1	x
19	-2	-1	1	2	-2	3	4	-4	-3	-4	
20	-2	-2	-2	-3	-4	-4	-2	-3	-2	-3	x
21	4	4	-4	-4	4	4	4	4	4	4	x
22	-2	-2	3	3	-2	-2	4	3	-3	-4	x
23	-1	1	-4	-1	3	2	2	-3	1	3	
24	-2	-2	-1	1	-2	-2	1	2	-2	-2	x
25	1	3	3	2	-4	-3	3	4	-4	-4	x
26	-1	-1	1	1	3	-2	1	1	-1	1	
27	2	2	-2	1	-1	2	3	2	2	2	x
28	-1	-1	-1	1	-1	-2	1	2	-1	-2	x
29											
30	-3	-3	-3	4	2	-3	-1	-3	-4	-3	
31	1	-2	1	2	-4	2	-3	-2	-2	-2	
32	-2	-1	1	1	-4	-3	2	4	-4	-3	x
33	-2	-2	1	1	-2	-3	3	3	-3	-2	x
34	1	2	1	-3	1	-2	-2	2	-1	1	
35	-2	2	-2	-1	3	1	2	4	1	3	x
36	2	2	2	2	3	-2	3	--	-2	-2	x
37	2	-1	2	2	4	4	2	-4	-1	3	

25

*Y is repeat of item X

Reliabilities-Repeat Items

BL Grp.	X	Y*	X	Y	X	Y	X	Y	X	Y	Consistent
Item	33	48	41	49	19	58	21	59	37	60	
Ss 1	-1	-2	2	2	4	3	-2	-2	-2	-1	x
2	1	4	1	2	4	2	2	1	1	1	
3	1	-3	1	1	-4	-4	2	3	-4	-3	x
4	-4	-4	4	4	-4	-3	2	3	-3	-3	x
5	-2	-1	2	-1	4	-3	-2	-2	-2	-3	
6	4	4	2	-1	4	-2	4	4	-4	-3	x
7	-2	-2	1	2	-3	-3	2	2	-2	-2	x
8	3	-1	2	--	-4	4	4	1	-2	-2	
9	-1	1	-1	1	-2	-1	2	-1	-1	-1	
10	-2	-2	2	2	-3	-3	4	2	-2	-2	x
11	-2	-2	1	2	-2	-4	4	4	-2	-2	x
12	-2	-1	1	-1	-4	-3	3	4	-3	-3	x
13	2	3	2	2	-2	-2	-3	-2	-2	-2	x
14	-2	-2	2	1	-3	-2	3	3	-2	-3	x
15	2	1	2	2	-2	2	2	-1	-1	-1	
16	2	-1	2	1	-1	-4	2	2	-2	-3	x
17	-3	-3	2	3	-4	-3	4	-3	-3	-3	x
18	-4	-4	1	1	-4	-3	3	3	-2	-2	x
19	4	-4	-3	-1	3	4	3	4	2	2	
20	-3	-4	-2	-3	-4	-4	2	1	-4	-3	x
21	2	2	2	-2	-2	-2	2	2	-2	-2	x
22	-1	3	-4	-4	2	-3	1	-1	-3	-2	
23	-2	-3	2	1	-3	-2	2	2	-2	-2	x
24	-2	-3	-2	-2	-3	-4	-2	-2	-3	-3	x
25	-2	-2	1	1	-2	-2	4	3	-3	-3	x
26	-2	4	-2	-2	-2	3	1	-2	4	3	
27	2	1	2	-2	-2	-2	-1	-2	-4	2	
28	-3	3	3	-2	3	3	-2	-2	-2	3	
29	2	1	-1	2	-2	1	-2	-2	-3	4	
30	-3	-3	--	--	-4	-3	1	1	-3	-3	x
31	-2	-2	3	3	1	3	-2	-2	-2	-2	x
32	-3	-3	-2	-1	-1	-2	-1	-1	-3	-3	x
33	1	-1	1	1	-3	-1	1	1	1	-1	
34	-4	3	-2	2	-2	-2	1	4	-3	-3	
35	-2	-2	1	2	-3	-3	4	4	-4	-4	x
36	-2	-1	-2	-1	-1	2	-4	-2	2	-4	
37	-2	-2	2	-2	-3	-2	-4	-4	-3	-4	x
											23

*Y is repeat of item X

APPENDIX C

Correlation Matrix for Organismic and Procedural Variables Analysis

Correlation Matrix
(Computed with Missing Data)

							Qualifiers Alone					
Rdg	Sex	Grde	Age	Per	Time	Grp	Cely	IKno	ItsC	Prly	IBel	
.71*	.10	-.12	-.08	-.23	.11	-.00	.13	.03	.29*	.05	-.08	Imf
	.21	-.18	-.07	-.24	.21	.13	.11	-.00	.43*	-.04	-.09	Rdg
		.10	-.06	.01	-.07	-.02	-.02	-.03	.16	.00	.08	Sex
			.34*	.03	.01	-.17	-.12	.01	-.13	-.10	.21	Grde
				-.13	-.02	-.08	-.02	-.14	-.11	.03	.13	Age
					-.13	.05	-.06	.20	-.05	-.00	-.10	Per
						-.11	.14	-.17	.07	.00	-.03	Imf
							.04	.05	.01	.01	-.08	Grp
								-.08	.39*	-.06	-.27*	Cely
									.29*	-.50*	.15	IKno
										-.37*	-.27*	ItsC
											-.07	Prly

* Level of significance: ($p < .01$, two-tailed test) .267, 90 df; .254, 100 df

Qualifiers in Arguments

ItsL	Poly	ISus	ItsP	Cely	IKno	ItsC	Prly	IBel	ItsL	Poly	ISus	ItsP	
.10	-.29*	-.24	-.14	.14	.25*	.36*	-.10	-.10	.04	-.36*	-.24	-.22	Int
.17	-.32*	-.21	-.20	.16	.30*	.48*	-.22	-.22	-.03	-.40*	-.16	-.23	Rdg
.11	-.10	-.16	-.10	-.05	.09	.24	-.14	.06	-.07	.08	-.23	-.16	Sex
-.02	.02	.23	-.09	-.04	.03	-.08	.11	-.06	-.14	.06	.13	.05	Grde
-.04	.14	.04	.05	.02	.04	-.00	.16	.00	-.02	-.14	.02	-.04	Age
-.11	.05	-.00	.06	-.16	-.03	-.17	.08	-.06	.08	.28*	-.06	.12	Per
.01	-.07	.03	.03	.11	.21	.19	.02	-.15	-.02	-.29*	.05	-.20	Imf
.00	-.00	-.09	.04	.02	.03	.02	.01	-.12	-.06	.04	.05	-.03	Grp
-.24	-.17	-.50*	-.21	.30*	.00	.13	-.10	-.02	-.03	-.07	-.04	-.27*	Cely
-.51*	-.42*	-.01	-.35*	-.10	.37*	-.00	-.10	-.05	-.15	.02	-.00	-.03	IKno
-.18	-.60*	-.41*	-.29*	.10	.31*	.32*	-.15	-.13	-.10	-.20	-.07	-.28*	ItsC
.18	.15	-.09	.05	-.05	-.24	.04	.01	.24	.17	-.02	-.08	-.02	Prly
-.34*	-.15	.20	-.31*	-.08	-.04	-.03	-.06	.10	-.14	.10	.10	.06	IBel
	.19	.04	.15	.07	-.06	.01	.15	-.08	.23	-.07	-.17	-.06	ItsL
		.02	.46*	-.09	-.26	-.33*	.10	.04	.13	.20	-.00	.38*	Poly
			-.11	.02	-.11	-.17	.11	.05	-.13	.01	.22	.11	ISus
				-.22	-.19	-.12	.14	-.10	.14	.11	.09	.28*	ItsP
					.16	.23	-.10	-.20	-.26*	-.49*	-.35*	-.30*	Cely
						.40*	-.12	-.39*	-.39*	-.50*	-.23	-.29*	IKno
							-.38*	-.34*	-.22	-.57*	-.26*	-.39*	ItsC
								-.16	.02	.03	.06	.01	Prly
									.17	.21	.09	-.12	IBel
										.20	-.12	-.14	ItsL
											.07	.33*	Poly
												.11	ISus